

SEQUENCE LISTING

<110> AUJAME et al.

<120> Nucleic acids and polypeptides specific for pathogenic strains of the Neisseria genus

<130> P07180US00/BAS

<140> 09/830,433

<141> 2001-04-26

<150> FR 98 13 693

<151> 1998-10-30

<160> 129

<170> PatentIn Ver. 2.1

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<213> Neisseria meningitidis

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cat ttg ggt gta aag atg tat tcg cac act gtt cct gcg att gcc gag 96
 His Leu Gly Val Lys Met Tyr Ser His Thr Val Pro Ala Ile Ala Glu
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ttg ata gcg aat gcc tac gat gca tgt gct agc gaa gtg gaa gtt agg 144
 Leu Ile Ala Asn Ala Tyr Asp Ala Cys Ala Thr Glu Val Glu Val Arg
 35 40 45

tta ttc gat aaa ccg gag cat aaa atc gtt atc aag gat aat ggt ata 192
 Leu Phe Asp Lys Pro Glu His Lys Ile Val Ile Lys Asp Asn Gly Ile
 50 55 60

gga atg agc ttc gat gaa atc aat gat ttt tat ttg aga atc ggt cgg 240
 Gly Met Ser Phe Asp Glu Ile Asn Asp Phe Tyr Leu Arg Ile Gly Arg
 65 70 75 80

aac aga agg gaa gaa aaa caa gct tcc ccg tgc gga aga act cca acg 288
 Asn Arg Arg Glu Glu Lys Gln Ala Ser Pro Cys Gly Arg Ile Pro Thr
 85 90 95

ggt aaa aaa ggc ctt ggt aaa ttg gca tta ttc ggg ctt ggc aac aaa 336
 Gly Lys Lys Gly Leu Gly Lys Leu Ala Leu Phe Gly Leu Gly Asn Lys
 100 105 110

att gaa att tct act atc cag gga aac gaa agg gtt act ttt act ttg 384
 Ile Glu Ile Ser Thr Ile Gln Gly Asn Glu Arg Val Thr Phe Thr Leu
 115 120 125

gat tat gca gag att cga aga agc aag ggt att tat caa ccg gag ttt 432
 Asp Tyr Ala Glu Ile Arg Arg Ser Lys Gly Ile Tyr Gln Pro Glu Phe
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0983043.00160

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Arg Lys Glu Ser Val Ser Asn Ile Glu Ser Gly Thr Thr Ile Thr	
145 155 160	
tta acc gaa ctg acg aaa aag caa gga tat ccg tta gat aat tat gta	528
Leu Thr Glu Leu Thr Lys Lys Gln Gly Tyr Pro Leu Asp Asn Tyr Val	
165 170 175	
gag cat ctt tcc cgc ttg ttt gat ttt ccg gct cag gat ttt aaa atc	576
Glu His Leu Ser Arg Leu Phe Asp Phe Pro Ala Gln Asp Phe Lys Ile	
180 185 190	
aaa gta agc ttg aac ggc tct gaa cct aaa atc att gat gga aat cta	624
Lys Val Ser Leu Asn Gly Ser Glu Pro Lys Ile Ile Asp Gly Asn Leu	
195 200 205	
aaa tat gat ctt gtt acc cca caa ttc gaa tgg gaa tac cag gat tta	672
Lys Tyr Asp Leu Val Thr Pro Gln Phe Glu Trp Glu Tyr Gln Asp Leu	
210 215 220	
gca acc aat att tca tct tta tct tca aaa ttc gaa cag tat gaa tac	720
Ala Thr Asn Ile Ser Ser Leu Ser Ser Lys Phe Glu Gln Tyr Glu Tyr	
225 230 235 240	
agc gga tta ata caa ggt aag ttc att aca acg gaa aaa cct tta aag	768
Ser Gly Leu Ile Gln Gly Lys Phe Ile Thr Thr Glu Lys Pro Leu Lys	
245 250 255	
aat aat atg aaa ggt att acc ttg ttt gcc aac ggc aga atg gta aat	816
Asn Asn Met Lys Gly Ile Thr Leu Phe Ala Asn Gly Arg Met Val Asn	
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35 40 45	
Leu Phe Asp Lys Pro Glu His Lys Ile Val Ile Lys Asp Asn Gly Ile	
50 55 60	
Gly Met Ser Phe Asp Glu Ile Asn Asp Phe Tyr Leu Arg Ile Gly Arg	
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Asn Arg Arg Glu Glu Lys Gln Ala Ser Pro Cys Gly Arg Ile Pro Thr	
85 90 95	
Gly Lys Lys Gly Leu Gly Lys Leu Ala Leu Phe Gly Leu Gly Asn Lys	
100 105 110	
Ile Glu Ile Ser Thr Ile Gln Gly Asn Glu Arg Val Thr Phe Thr Leu	
115 120 125	

Asp Tyr Ala Glu Ile Arg Ser Lys Gly Ile Tyr Gln Pro Glu Phe
 130 135 140
 Arg Lys Glu Ser Val Glu Ser Asn Ile Glu Ser Gly Thr Thr Ile Thr
 145 150 155 160
 Leu Thr Glu Leu Thr Lys Lys Gln Gly Tyr Pro Leu Asp Asn Tyr Val
 165 170 175
 Glu His Leu Ser Arg Leu Phe Asp Phe Pro Ala Gln Asp Phe Lys Ile
 180 185 190
 Lys Val Ser Leu Asn Gly Ser Glu Pro Lys Ile Ile Asp Gly Asn Leu
 195 200 205
 Lys Tyr Asp Leu Val Thr Pro Gln Phe Glu Trp Glu Tyr Gln Asp Leu
 210 215 220
 Ala Thr Asn Ile Ser Ser Leu Ser Ser Lys Phe Glu Gln Tyr Glu Tyr
 225 230 235 240
 Ser Gly Leu Ile Gln Gly Lys Phe Ile Thr Thr Glu Lys Pro Leu Lys
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 gac aaa tta cta acc gaa aat acc cat att tgg cta ttt ata ggt gta 96
 Asp Lys Leu Leu Thr Glu Asn Thr His Ile Trp Leu Phe Ile Gly Val
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 tta cac aaa atg tta cct att agt ctg gtg caa tcc cta cta cgt ttc 144
 Leu His Lys Met Leu Pro Ile Ser Leu Val Gln Ser Leu Leu Arg Phe
 35 40 45
 ggc gaa cgt gtc cat ctt gtc cag tta caa aaa acg ggg aaa aac gca 192
 Gly Glu Arg Val His Leu Val Gln Leu Gln Lys Thr Gly Lys Asn Ala
 50 55 60
 ttg gat ttt tac ctg tcc tat tac ctc gga caa att acc gcc aca gac 240
 Leu Asp Phe Tyr Leu Ser Tyr Tyr Leu Gly Gln Ile Thr Ala Thr Asp
 65 70 75 80
 ccc aat gcc caa atc ggc ata ctc tcg cgt gat gga gga tac gat gtt 288
 Pro Asn Ala Gln Ile Gly Ile Leu Ser Arg Asp Gly Gly Tyr Asp Val
 85 90 95

09830433-081601

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Leu Val Glu His Ile	Lys Asn His Gln Ala Lys Gly Ile	Val Arg	
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cta gcc aat ata gat gaa gta caa cat cag aaa att gct acc gaa ccg		384	
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115	120	125	
ccg tca gca ttg ctg gaa aac act cct cag cct gaa acc acc ctc aaa		432	
Pro Ser Ala Leu Leu Glu Asn Thr Pro Gln Pro Glu Thr Thr Leu Lys			
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cca cag caa cca tta act tcc tat ttc caa gca gcc cta act gca ctg		480	
Pro Gln Gln Pro Leu Thr Ser Tyr Phe Gln Ala Ala Leu Thr Ala Leu			
145	150	155	160
cgc cgc ccc gac gct ttc cgc ccc tgc cgc ctg cat aac ctg cga caa		528	
Arg Arg Pro Asp Ala Phe Arg Pro Cys Arg Leu His Asn Leu Arg Gln			
165	170	175	
aat ctg cgt aag cat att ttg agt gat ttg ttt aaa gaa aaa acc gat		576	
Asn Leu Arg Lys His Ile Leu Ser Asp Leu Phe Lys Glu Lys Thr Asp			
180	185	190	
gaa gaa tgc gaa ata acc act gct aac gtt atc aat aaa ctc aaa gca		624	
Glu Glu Cys Glu Ile Thr Thr Ala Asn Val Ile Asn Lys Leu Lys Ala			
195	200	205	
caa aac ttc atc agc att gat gaa cag gaa acc gtt tcc tac cat ctc		672	
Gln Asn Phe Ile Ser Ile Asp Glu Gln Glu Thr Val Ser Tyr His Leu			
210	215	220	
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Ser Asp Asn Asp Leu Leu Gln Arg Ile Gln Arg His Ile Leu Ser Gln			
225	230	235	240
cgt ccc aaa acc tac gct gat ttt caa gcc gtc gtg caa aac cga gca		768	
Arg Pro Lys Thr Tyr Ala Asp Phe Gln Ala Val Val Gln Asn Arg Ala			
245	250	255	
gat gca ctt cac tta aca gtc ggt acc aac gac att caa tcc ttt gcg		816	
Asp Ala Leu His Leu Thr Val Gly Thr Asn Asp Ile Gln Ser Phe Ala			
260	265	270	
cga cat ttg cgc gac caa aac ctg atc cgc caa aac aat ggg aaa att		864	
Arg His Leu Arg Asp Gln Asn Leu Ile Arg Gln Asn Asn Gly Lys Ile			
275	280	285	
gaa tat gca ccg ttt act gaa cct aaa cca cag cca acg ccc aag cag		912	
Glu Tyr Ala Pro Phe Thr Glu Pro Lys Pro Gln Pro Thr Pro Lys Gln			
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cct aaa aaa acc gca tgg gaa cct gat gaa att att tgg aaa aaa gtg		960	
Pro Lys Lys Thr Ala Trp Glu Pro Asp Glu Ile Ile Trp Lys Lys Val			
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325	330	335	
cgc aat aca atc cag gca ctc aca aaa tcc aat gca caa gaa act gac		1056	
Arg Asn Thr Ile Gln Ala Leu Thr Lys Ser Asn Ala Gln Glu Thr Asp			
340	345	350	
aaa ctg cta caa cat tta caa gat gac cca agt cct acg tat tga		1101	

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Leu His Lys Met Leu Pro Ile Ser Leu Val Gln Ser Leu Leu Arg Phe
 35 40 45

Gly Glu Arg Val His Leu Val Gln Leu Gln Lys Thr Gly Lys Asn Ala
 50 55 60

Leu Asp Phe Tyr Leu Ser Tyr Tyr Leu Gly Gln Ile Thr Ala Thr Asp
 65 70 75 80

Pro Asn Ala Gln Ile Gly Ile Leu Ser Arg Asp Gly Gly Tyr Asp Val
 85 90 95

Leu Val Glu His Ile Leu Lys Asn His Gln Ala Lys Gly Ile Val Arg
 100 105 110

Leu Ala Asn Ile Asp Glu Val Gln His Gln Lys Ile Ala Thr Glu Pro
 115 120 125

Pro Ser Ala Leu Leu Glu Asn Thr Pro Gln Pro Glu Thr Thr Leu Lys
 130 135 140

Pro Gln Gln Pro Leu Thr Ser Tyr Phe Gln Ala Ala Leu Thr Ala Leu
 145 150 155 160

Arg Arg Pro Asp Ala Phe Arg Pro Cys Arg Leu His Asn Leu Arg Gln
 165 170 175

Asn Leu Arg Lys His Ile Leu Ser Asp Leu Phe Lys Glu Lys Thr Asp
 180 185 190

Glu Glu Cys Glu Ile Thr Thr Ala Asn Val Ile Asn Lys Leu Lys Ala
 195 200 205

Gln Asn Phe Ile Ser Ile Asp Glu Gln Glu Thr Val Ser Tyr His Leu
 210 215 220

Ser Asp Asn Asp Leu Leu Gln Arg Ile Gln Arg His Ile Leu Ser Gln
 225 230 235 240

Arg Pro Lys Thr Tyr Ala Asp Phe Gln Ala Val Val Gln Asn Arg Ala
 245 250 255

Asp Ala Leu His Leu Thr Val Gly Thr Asn Asp Ile Gln Ser Phe Ala
 260 265 270

Arg His Leu Arg Asp Gln Asn Leu Ile Arg Gln Asn Asn Gly Lys Ile
 275 280 285

Glu Tyr Ala Pro Phe Thr Glu Pro Lys Pro Gln Pro Thr Pro Lys Gln
 290 295 300

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Pro Lys Lys Thr Ala Glu Pro Asp Glu Ile Ile Trp Lys Lys Val
 305 315 320

Ile Ala Ala Leu Ser Leu Lys Asn Arg Pro Asn Lys Thr Lys Thr Leu
 325 330 335

Arg Asn Thr Ile Gln Ala Leu Thr Lys Ser Asn Ala Gln Glu Thr Asp
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gcc agc gaa atc gcc tat cgc ttt gta ttc gga att gaa acc tta ccg 96
 Ala Ser Glu Ile Ala Tyr Arg Phe Val Phe Gly Ile Glu Thr Leu Pro
 20 25 30

gct gca aaa atg gca gaa acg ttt gcg ctg aca ttt atg att gct gcg 144
 Ala Ala Lys Met Ala Glu Thr Phe Ala Leu Thr Phe Met Ile Ala Ala
 35 40 45

ctg tat ctg ttt gcg cgt tat aag gct tcg cgg ctg ctg att gcg gtg 192
 Leu Tyr Leu Phe Ala Arg Tyr Lys Ala Ser Arg Leu Leu Ile Ala Val
 50 55 60

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 Phe Phe Ala Phe Ser Ile Ile Ala Asn Asn Val His Tyr Ala Val Tyr
 65 70 75 80

caa agt tgg atg acg ggc atc aat tat tgg ctg atg ctg aaa gag att 288
 Gln Ser Trp Met Thr Gly Ile Asn Tyr Trp Leu Met Leu Lys Glu Ile
 85 90 95

acc gaa gtc ggc agt gcg ggc gcg tcg atg ttg gat aag ttg tgg ctg 336
 Thr Glu Val Gly Ser Ala Gly Ala Ser Met Leu Asp Lys Leu Trp Leu
 100 105 110

cct gcg ttg tgg ggc gtg ttg gaa gtc atg ttg ttt tgc agc ctt gcc 384
 Pro Ala Leu Trp Gly Val Leu Glu Val Met Leu Phe Cys Ser Leu Ala
 115 120 125

aag ttc cac cgt aag acg cat ttt tct gcc gat ata ctg ttt gcc ttc 432
 Lys Phe His Arg Lys Thr His Phe Ser Ala Asp Ile Leu Phe Ala Phe
 130 135 140

cta atg ctg atg att ttc gtg cgt tcg ttc gac acg aaa caa gag cac 480
 Leu Met Leu Met Ile Phe Val Arg Ser Phe Asp Thr Lys Gln Glu His
 145 150 155 160

ggt att tcg ccc aaa ccg aca tac agc cgc atc aaa gcc aat tat ttc 528

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Ser	Phe	Gly	Tyr	Phe	Val	Gly	Arg	Val	Leu	Pro	Tyr	Gln	Leu	Phe	Asp	
			180					185					190			
tta	agc	agg	att	ccc	gcc	ttt	aag	cag	cct	gct	cca	agc	aaa	atc	ggg	624
Leu	Ser	Arg	Ile	Pro	Ala	Phe	Lys	Gln	Pro	Ala	Pro	Ser	Lys	Ile	Gly	
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Gln	Gly	Ser	Val	Gln	Asn	Ile	Val	Leu	Ile	Met	Gly	Glu	Ser	Glu	Ser	
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gcg	gcg	cat	ttg	aag	ctg	ttt	ggc	tac	gga	cgc	gaa	act	tcg	ccg	ttt	720
Ala	Ala	His	Leu	Lys	Leu	Phe	Gly	Tyr	Gly	Arg	Glu	Thr	Ser	Pro	Phe	
225					230				235						240	
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Leu	Thr	Arg	Leu	Ser	Gln	Ala	Asp	Phe	Lys	Pro	Ile	Val	Lys	Gln	Ser	
				245					250					255		
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Tyr	Ser	Ala	Gly	Phe	Met	Thr	Ala	Val	Ser	Leu	Pro	Ser	Phe	Phe	Asn	
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gcg	ata	ccg	cac	gcc	aac	ggc	ttg	gaa	caa	atc	agc	ggc	ggc	gat	act	864
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Ser	Ala	Gln	Ala	Glu	Asn	Glu	Met	Ala	Ile	Leu	Asn	Leu	Ile	Gly	Lys	
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Lys	Trp	Ile	Asp	His	Leu	Ile	Gln	Pro	Thr	Gln	Leu	Gly	Tyr	Gly	Asn	
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Gly	Asp	Asn	Met	Pro	Asp	Glu	Lys	Leu	Leu	Pro	Leu	Phe	Asp	Lys	Ile	
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Asn	Leu	Gln	Gln	Gly	Arg	His	Phe	Ile	Val	Leu	His	Gln	Arg	Gly	Ser	
			355				360					365				
cac	gcc	cca	tac	agc	gca	ttg	ttg	cag	cct	caa	gat	aaa	gta	ttc	ggc	1152
His	Ala	Pro	Tyr	Ser	Ala	Leu	Gln	Gln	Pro	Gln	Asp	Lys	Val	Phe	Gly	
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gaa	ctt	att	gtg	gat	aag	tac	gac	aac	acc	atc	cac	aaa	acc	gac	caa	1200
Glu	Leu	Ile	Val	Asp	Lys	Tyr	Asp	Asn	Thr	Ile	His	Lys	Thr	Asp	Gln	
385					390				395						400	
atg	att	caa	acc	gta	ttc	gag	cag	ctg	caa	aag	cag	cct	gac	ggc	aac	1248
Met	Ile	Gln	Thr	Val	Phe	Glu	Gln	Leu	Gln	Lys	Gln	Pro	Asp	Gly	Asn	
				405				410						415		
tgg	ctg	ttt	ggc	tat	acc	tcc	gat	cat	ggc	cag	tat	gtt	cgc	caa	gat	1296
Trp	Leu	Phe	Ala	Tyr	Thr	Ser	Asp	His	Gly	Gln	Tyr	Val	Arg	Gln	Asp	
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Ile Tyr Asn Gln Gly	Val Gln Pro Asp Ser Tyr Leu Val Pro Leu	
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Val Leu Tyr Ser Ser Asn Lys Ala Val Gln Gln Ala Ala Asn Gln Ala		
450 455 460		
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Phe Ala Pro Cys Glu Ile Ala Phe His Gln Gln Leu Ser Thr Phe Leu		
465 470 475 480		
att cac acg ttg ggc tac gat atg ccg gtt tca ggt tgt cgc gaa ggc	1488	
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485 490 495		
tcg gta acg ggc aac ctg att acg ggt gat gca ggc agc ttg aac att	1536	
Ser Val Thr Gly Asn Leu Ile Thr Gly Asp Ala Gly Ser Leu Asn Ile		
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35 40 45	
Leu Tyr Leu Phe Ala Arg Tyr Lys Ala Ser Arg Leu Leu Ile Ala Val	
50 55 60	
Phe Phe Ala Phe Ser Ile Ile Ala Asn Asn Val His Tyr Ala Val Tyr	
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Gln Ser Trp Met Thr Gly Ile Asn Tyr Trp Leu Met Leu Lys Glu Ile	
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Thr Glu Val Gly Ser Ala Gly Ala Ser Met Leu Asp Lys Leu Trp Leu	
100 105 110	
Pro Ala Leu Trp Gly Val Leu Glu Val Met Leu Phe Cys Ser Leu Ala	
115 120 125	
Lys Phe His Arg Lys Thr His Phe Ser Ala Asp Ile Leu Phe Ala Phe	
130 135 140	
Leu Met Leu Met Ile Phe Val Arg Ser Phe Asp Thr Lys Gln Glu His	
145 150 155 160	
Gly Ile Ser Pro Lys Pro Thr Tyr Ser Arg Ile Lys Ala Asn Tyr Phe	
165 170 175	
Ser Phe Gly Tyr Phe Val Gly Arg Val Leu Pro Tyr Gln Leu Phe Asp	

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180

185

190

Leu	Ser	Arg	Ile	Pro		Phe	Lys	Gln	Pro	Ala	Pro	Ser	Ly		Ile	Gly
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Gln	Gly	Ser	Val	Gln	Asn	Ile	Val	Leu	Ile	Met	Gly	Glu	Ser	Glu	Ser	
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Leu	Thr	Arg	Leu	Ser	Gln	Ala	Asp	Phe	Lys	Pro	Ile	Val	Lys	Gln	Ser	
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Tyr	Ser	Ala	Gly	Phe	Met	Thr	Ala	Val	Ser	Leu	Pro	Ser	Phe	Phe	Asn	
			260					265					270			
Ala	Ile	Pro	His	Ala	Asn	Gly	Leu	Glu	Gln	Ile	Ser	Gly	Gly	Asp	Thr	
		275					280					285				
Asn	Met	Phe	Arg	Leu	Ala	Lys	Glu	Gln	Gly	Tyr	Glu	Thr	Tyr	Phe	Tyr	
	290					295					300					
Ser	Ala	Gln	Ala	Glu	Asn	Glu	Met	Ala	Ile	Leu	Asn	Leu	Ile	Gly	Lys	
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Lys	Trp	Ile	Asp	His	Leu	Ile	Gln	Pro	Thr	Gln	Leu	Gly	Tyr	Gly	Asn	
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Gly	Asp	Asn	Met	Pro	Asp	Glu	Lys	Leu	Leu	Pro	Leu	Phe	Asp	Lys	Ile	
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Asn	Leu	Gln	Gln	Gly	Arg	His	Phe	Ile	Val	Leu	His	Gln	Arg	Gly	Ser	
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His	Ala	Pro	Tyr	Ser	Ala	Leu	Leu	Gln	Pro	Gln	Asp	Lys	Val	Phe	Gly	
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Glu	Leu	Ile	Val	Asp	Lys	Tyr	Asp	Asn	Thr	Ile	His	Lys	Thr	Asp	Gln	
385					390					395					400	
Met	Ile	Gln	Thr	Val	Phe	Glu	Gln	Leu	Gln	Lys	Gln	Pro	Asp	Gly	Asn	
				405				410						415		
Trp	Leu	Phe	Ala	Tyr	Thr	Ser	Asp	His	Gly	Gln	Tyr	Val	Arg	Gln	Asp	
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Ile	Tyr	Asn	Gln	Gly	Thr	Val	Gln	Pro	Asp	Ser	Tyr	Leu	Val	Pro	Leu	
		435					440					445				
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	450					455					460					
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				485				490						495		
Ser	Val	Thr	Gly	Asn	Leu	Ile	Thr	Gly	Asp	Ala	Gly	Ser	Leu	Asn	Ile	
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<220>
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Met Ala Leu Ala Val Ala Thr Thr Leu Ser Ala Cys Leu Gly Gly Gly	
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ggc ggc act tct gcg ccc gac ttc aat gca ggc ggc acc ggt atc ggc	144
Gly Gly Thr Ser Ala Pro Asp Phe Asn Ala Gly Gly Thr Gly Ile Gly	
35 40 45	
agc aac agc aga gca aca aca gcg aaa tca gca gca gta tct tac gcc	192
Ser Asn Ser Arg Ala Thr Thr Ala Lys Ser Ala Ala Val Ser Tyr Ala	
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ggt atc aag aac gaa atg tgc aaa gac aga agc atg ctc tgt gcc ggt	240
Gly Ile Lys Asn Glu Met Cys Lys Asp Arg Ser Met Leu Cys Ala Gly	
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cgg gat gac gtt gcg gtt aca gac agg gat gcc aaa atc aat gcc ccc	288
Arg Asp Asp Val Ala Val Thr Asp Arg Asp Ala Lys Ile Asn Ala Pro	
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ccc ccg aat ctg cat acc gga gac ttt aca aac cca aat gac gca tac	336
Pro Pro Asn Leu His Thr Gly Asp Phe Thr Asn Pro Asn Asp Ala Tyr	
100 105 110	
aag aat ttg atc aac ctc aaa cct gca att gaa gca ggc tat aca gga	384
Lys Asn Leu Ile Asn Leu Lys Pro Ala Ile Glu Ala Gly Tyr Thr Gly	
115 120 125	
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Arg Gly Val Glu Val Gly Ile Val Asp Thr Gly Glu Ser Val Gly Ser	
130 135 140	
ata tcc ttt ccc gaa ctg tat ggc aga aaa gaa cac ggc tat aac gaa	480
Ile Ser Phe Pro Glu Leu Tyr Gly Arg Lys Glu His Gly Tyr Asn Glu	
145 150 155 160	
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Asn Tyr Lys Asn Tyr Thr Ala Tyr Met Arg Lys Glu Ala Pro Glu Asp	
165 170 175	
gga ggc ggt aaa gac att aaa gct tct ttc gac gat gag gcc gtt ata	576
Gly Gly Gly Lys Asp Ile Lys Ala Ser Phe Asp Asp Glu Ala Val Ile	
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Glu Thr Glu Ala Lys Pro Thr Asp Ile Arg His Val Lys Glu Ile Gly	
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His Ile Asp Val Val Ser His Ile Ile Gly Gly Arg Ser Val Asp Gly	
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Thr His Asp Gly Thr Lys Asn Glu Ile Met Ser Ala Ala Ile Arg Asn		
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Ala Trp Val Lys Leu Gly Glu Arg Gly Val Arg Ile Val Asn Asn Ser		
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Phe Gly Thr Thr Ser Arg Ala Gly Thr Ala Asp His Phe Gln Ile Ala		
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Asn Ser Glu Glu Gln Tyr Arg Gln Ala Leu Leu Ala Tyr Ser Gly Gly		
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Asp Lys Thr Asp Glu Gly Ile Arg Leu Met Gln Gln Ser Asp Tyr Gly		
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Asn Leu Ser Tyr His Ile Arg Asn Lys Asn Met Leu Phe Ile Phe Ser		
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Ala Ser Asn Asp Ala Gln Ala Gln Pro Asn Thr Leu Thr Leu Leu Pro		
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Phe Tyr Glu Lys Asp Ala Gln Lys Gly Ile Ile Thr Val Ala Gly Val		
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gcc atg tgg tgc cta tcg gca ccc tat gaa gca agc gtc cgt ttc acc	1200	
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Val Thr Gly Thr Ala Ala Leu Leu Leu Gln Lys Tyr Pro Trp Met Ser		
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Asn Asp Asn Leu Arg Thr Thr Leu Leu Thr Thr Ala Gln Asp Ile Gly		
435 440 445		
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Ala Val Gly Val Asp Ser Lys Phe Gly Trp Gly Leu Leu Asp Ala Gly		
450 455 460		
aag gcc atg aac gga ccc gcg tcc ttt ccg ttc ggc gac ttt acc gcc	1440	
Lys Ala Met Asn Gly Pro Ala Ser Phe Pro Phe Gly Asp Phe Thr Ala		
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Asp	Thr	Lys	Gly	Thr	Ser	Asp	Ile	Ala	Tyr	Ser	Phe	Arg	Asn	Asp	Ile		
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tca	ggc	acg	ggc	ggc	ctg	atc	aaa	aaa	ggc	ggc	agc	caa	ctg	caa	ctg	1536	
Ser	Gly	Thr	Gly	Gly	Leu	Ile	Lys	Lys	Gly	Gly	Ser	Gln	Leu	Gln	Leu		
500																505	510
cac	ggc	aac	aac	acc	tat	acg	ggc	aaa	acc	att	atc	gaa	ggc	ggt	tcg	1584	
His	Gly	Asn	Asn	Thr	Tyr	Thr	Gly	Lys	Thr	Ile	Ile	Glu	Gly	Gly	Ser		
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ctg	gtg	ttg	tac	ggc	aac	aac	aaa	tcg	gat	atg	cgc	gtc	gaa	acc	aaa	1632	
Leu	Val	Leu	Tyr	Gly	Asn	Asn	Lys	Ser	Asp	Met	Arg	Val	Glu	Thr	Lys		
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ggt	gcg	ctg	att	tat	aac	ggg	gcg	gca	tcc	ggc	ggt	agc	ctg	aac	agc	1680	
Gly	Ala	Leu	Ile	Tyr	Asn	Gly	Ala	Ala	Ser	Gly	Gly	Ser	Leu	Asn	Ser		
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gac	ggc	att	gtc	tat	ctg	gca	gat	acc	gac	cga	tcc	ggc	gca	aac	gaa	1728	
Asp	Gly	Ile	Val	Tyr	Leu	Ala	Asp	Thr	Asp	Arg	Ser	Gly	Ala	Asn	Glu		
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acc	gtg	cac	atc	aaa	ggc	gat	ctg	cag	ctg	ggc	ggc	gaa	ggt	acg	ctg	1776	
Thr	Val	His	Ile	Lys	Gly	Asp	Leu	Gln	Leu	Gly	Gly	Glu	Gly	Thr	Leu		
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tac	aca	cgt	ttg	ggc	aaa	ctg	ctg	aaa	gtg	gac	ggt	acg	gcg	atg	acc	1824	
Tyr	Thr	Arg	Leu	Gly	Lys	Leu	Leu	Lys	Val	Asp	Gly	Thr	Ala	Met	Thr		
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ggc	ggc	aag	ctg	tac	atg	tcg	gca	cgc	ggc	aaa	ggg	gca	ggc	tat	ctc	1872	
Gly	Gly	Lys	Leu	Tyr	Met	Ser	Ala	Arg	Gly	Lys	Gly	Ala	Gly	Tyr	Leu		
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aac	cgt	acc	gga	caa	cgt	gtt	ccc	ttc	ctg	agt	gcc	gcc	aaa	atc	ggg	1920	
Asn	Arg	Thr	Gly	Gln	Arg	Val	Pro	Phe	Leu	Ser	Ala	Ala	Lys	Ile	Gly		
625																630	635
cgg	gat	tat	tct	ttc	ttc	aca	aac	atc	gaa	acc	gac	ggt	ggt	ctg	ctg	1968	
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645																650	655
gct	tcc	ctc	gac	agc	gtc	gaa	aaa	aca	gcg	ggc	agt	gaa	ggc	gac	acg	2016	
Ala	Ser	Leu	Asp	Ser	Val	Glu	Lys	Thr	Ala	Gly	Ser	Glu	Gly	Asp	Thr		
660																665	670
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Leu	Ser	Tyr	Tyr	Val	Arg	Arg	Gly	Asn	Ala	Ala	Arg	Thr	Ala	Ser	Ala		
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gcg	gca	cat	tcc	gcg	ccc	gcc	ggt	ctg	aaa	cac	gcc	gta	gaa	cag	ggc	2112	
Ala	Ala	His	Ser	Ala	Pro	Ala	Gly	Leu	Lys	His	Ala	Val	Glu	Gln	Gly		
690																695	700
ggc	agc	aat	ctg	gaa	aac	ctg	atg	gtc	gaa	ctg	gat	gcc	tcc	gaa	tca	2160	
Gly	Ser	Asn	Leu	Glu	Asn	Leu	Met	Val	Glu	Leu	Asp	Ala	Ser	Glu	Ser		
705																710	715
tcc	gca	aca	ccc	gag	acg	gtt	gaa	act	gcg	gcc	gcc	gac	cgc	aca	gat	2208	
Ser	Ala	Thr	Pro	Glu	Thr	Val	Glu	Thr	Ala	Ala	Ala	Asp	Arg	Thr	Asp		
725																730	735
atg	ccg	ggc	atc	cgc	ccc	tac	ggc	gca									

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Val Gln His Ala Asn Ala Asp Gly Val Arg Ile Phe Asn Ser Leu	
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gcc gct acc gtc tat gcc gac agt acc gcc gcc cat gcc gat atg cag	2352
Ala Ala Thr Val Tyr Ala Asp Ser Thr Ala Ala His Ala Asp Met Gln	
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Gly Arg Arg Leu Lys Ala Val Ser Asp Gly Leu Asp His Asn Ala Thr	
785 790 795 800	
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Gly Leu Arg Val Ile Ala Gln Thr Gln Gln Asp Gly Gly Thr Trp Glu	
805 810 815	
cag ggc ggt gtt gaa ggc aaa atg cgc ggc agt acc caa acc gtc ggc	2496
Gln Gly Gly Val Glu Gly Lys Met Arg Gly Ser Thr Gln Thr Val Gly	
820 825 830	
att gcc gcg aaa acc ggc gaa aat acg aca gca gcc gcc aca ctg ggc	2544
Ile Ala Ala Lys Thr Gly Glu Asn Thr Thr Ala Ala Ala Thr Leu Gly	
835 840 845	
atg gga cac agc aca tgg agc gaa aac agt gca aat gca aaa acc gac	2592
Met Gly His Ser Thr Trp Ser Glu Asn Ser Ala Asn Ala Lys Thr Asp	
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agc att agt ctg ttt gca ggc ata cgg cac gat gcg ggc gat atc ggc	2640
Ser Ile Ser Leu Phe Ala Gly Ile Arg His Asp Ala Gly Asp Ile Gly	
865 870 875 880	
tat ctc aaa ggc ctg ttc tcc tac gga cgc tac aaa aac agc atc agc	2688
Tyr Leu Lys Gly Leu Phe Ser Tyr Gly Arg Tyr Lys Asn Ser Ile Ser	
885 890 895	
cgc agc acc ggt gcg gac gaa cat gcg gaa ggc agc gtc aac ggc acg	2736
Arg Ser Thr Gly Ala Asp Glu His Ala Glu Gly Ser Val Asn Gly Thr	
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ctg atg cag ctg ggc gca ctg ggc ggt gtc aac gtt ccg ttt gcc gca	2784
Leu Met Gln Leu Gly Ala Leu Gly Gly Val Asn Val Pro Phe Ala Ala	
915 920 925	
acg gga gat ttg acg gtc gaa ggc ggt ctg cgc tac gac ctg ctc aaa	2832
Thr Gly Asp Leu Thr Val Glu Gly Thr Glu Gly Leu Arg Tyr Asp Leu Leu Lys	
930 935 940	
cag gat gca ttc gcc gaa aaa ggc agt gct ttg ggc tgg agc ggc aac	2880
Gln Asp Ala Phe Ala Glu Lys Gly Ser Ala Leu Gly Trp Ser Gly Asn	
945 950 955 960	
agc ctc act gaa ggc aca ctg gtc gga ctc gcg ggt ctg aag ctg tcg	2928
Ser Leu Thr Glu Gly Thr Leu Val Gly Leu Ala Gly Leu Lys Leu Ser	
965 970 975	
caa ccc ttg agc gat aaa gcc gtc ctg ttt gca acg gcg ggc gtg gaa	2976
Gln Pro Leu Ser Asp Lys Ala Val Leu Phe Ala Thr Ala Gly Val Glu	
980 985 990	
cgc gac ctg aac gga cgc gac tac acg gta acg ggc ggc ttt acc ggc	3024
Arg Asp Leu Asn Gly Arg Asp Tyr Thr Val Thr Gly Gly Phe Thr Gly	
995 1000 1005	
gcg act gca gca acc ggc aag acg ggg gca cgc aat atg ccg cac acc	3072

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Phe	Gly	Thr	Thr	Ser	Arg	Ala	Gly	Thr	Ala	Asp	His	Phe	Gln	Ile	Ala
		275					280					285			
Asn	Ser	Glu	Glu	Gln	Tyr	Arg	Gln	Ala	Leu	Leu	Ala	Tyr	Ser	Gly	Gly
	290					295					300				
Asp	Lys	Thr	Asp	Glu	Gly	Ile	Arg	Leu	Met	Gln	Gln	Ser	Asp	Tyr	Gly
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Asn	Leu	Ser	Tyr	His	Ile	Arg	Asn	Lys	Asn	Met	Leu	Phe	Ile	Phe	Ser
				325					330					335	
Ala	Ser	Asn	Asp	Ala	Gln	Ala	Gln	Pro	Asn	Thr	Leu	Thr	Leu	Leu	Pro
			340					345					350		
Phe	Tyr	Glu	Lys	Asp	Ala	Gln	Lys	Gly	Ile	Ile	Thr	Val	Ala	Gly	Val
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Asp	Arg	Ser	Gly	Glu	Lys	Phe	Asn	Gly	Ser	Asn	His	Cys	Gly	Ile	Thr
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Arg	Thr	Asn	Pro	Ile	Gln	Ile	Ala	Gly	Thr	Ser	Phe	Ser	Ala	Pro	Ile
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Val	Thr	Gly	Thr	Ala	Ala	Leu	Leu	Leu	Gln	Lys	Tyr	Pro	Trp	Met	Ser
			420					425					430		
Asn	Asp	Asn	Leu	Arg	Thr	Thr	Leu	Leu	Thr	Thr	Ala	Gln	Asp	Ile	Gly
		435					440					445			
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Lys	Ala	Met	Asn	Gly	Pro	Ala	Ser	Phe	Pro	Phe	Gly	Asp	Phe	Thr	Ala
465					470					475					480
Asp	Thr	Lys	Gly	Thr	Ser	Asp	Ile	Ala	Tyr	Ser	Phe	Arg	Asn	Asp	Ile
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			500					505					510		
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Leu	Val	Leu	Tyr	Gly	Asn	Asn	Lys	Ser	Asp	Met	Arg	Val	Glu	Thr	Lys
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Asp	Gly	Ile	Val	Tyr	Leu	Ala	Asp	Thr	Asp	Arg	Ser	Gly	Ala	Asn	Glu
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 Gly Gly Lys Leu Tyr Met Ser Ala Arg Gly Lys Gly Ala Gly Tyr Leu
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 Asn Arg Thr Gly Gln Arg Val Pro Phe Leu Ser Ala Ala Lys Ile Gly
 625 630 635 640
 Arg Asp Tyr Ser Phe Phe Thr Asn Ile Glu Thr Asp Gly Gly Leu Leu
 645 650 655
 Ala Ser Leu Asp Ser Val Glu Lys Thr Ala Gly Ser Glu Gly Asp Thr
 660 665 670
 Leu Ser Tyr Tyr Val Arg Arg Gly Asn Ala Ala Arg Thr Ala Ser Ala
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 Ala Ala His Ser Ala Pro Ala Gly Leu Lys His Ala Val Glu Gln Gly
 690 695 700
 Gly Ser Asn Leu Glu Asn Leu Met Val Glu Leu Asp Ala Ser Glu Ser
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 Met Pro Gly Ile Arg Pro Tyr Gly Ala Thr Phe Arg Ala Ala Ala Ala
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 Gly Leu Arg Val Ile Ala Gln Thr Gln Gln Asp Gly Gly Thr Trp Glu
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 Gln Gly Gly Val Glu Gly Lys Met Arg Gly Ser Thr Gln Thr Val Gly
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 835 840 845
 Met Gly His Ser Thr Trp Ser Glu Asn Ser Ala Asn Ala Lys Thr Asp
 850 855 860
 Ser Ile Ser Leu Phe Ala Gly Ile Arg His Asp Ala Gly Asp Ile Gly
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 Tyr Leu Lys Gly Leu Phe Ser Tyr Gly Arg Tyr Lys Asn Ser Ile Ser
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 Arg Ser Thr Gly Ala Asp Glu His Ala Glu Gly Ser Val Asn Gly Thr
 900 905 910
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 Thr Gly Asp Leu Thr Val Glu Gly Gly Leu Arg Tyr Asp Leu Leu Lys
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Gln Asp Ala Phe Ala Lys Gly Ser Ala Leu Gly Trp Ser Gly Asn
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Gln Pro Leu Ser Asp Lys Ala Val Leu Phe Ala Thr Ala Gly Val Glu
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Arg Asp Leu Asn Gly Arg Asp Tyr Thr Val Thr Gly Gly Phe Thr Gly
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Ala Thr Ala Ala Thr Gly Lys Thr Gly Ala Arg Asn Met Pro His Thr
 1010 1015 1020

Arg Leu Val Ala Gly Leu Gly Ala Asp Val Glu Phe Gly Asn Gly Trp
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gca ggt tgc ggc tca atc aat aat gta acc gtt tcc gac cag aaa ctt 96
 Ala Gly Cys Gly Ser Ile Asn Asn Val Thr Val Ser Asp Gln Lys Leu
 20 25 30

cag gaa cgt gcc gcg ttt gcc ttg ggc gtc agc caa aat gcc gta aaa 144
 Gln Glu Arg Ala Ala Phe Ala Leu Gly Val Ser Gln Asn Ala Val Lys
 35 40 45

atc agc aac cgc agc aat gaa agc ata cgc atc aac ttt acc gca act 192
 Ile Ser Asn Arg Ser Asn Glu Ser Ile Arg Ile Asn Phe Thr Ala Thr
 50 55 60

gtg ggt aag cgc gtg agc caa tgc tat gtt acc agt gta atc agc aca 240
 Val Gly Lys Arg Val Ser Gln Cys Tyr Val Thr Ser Val Ile Ser Thr
 65 70 75 80

atc ggc gtt acc act tcc gat gca att tgt ttg gga ggc gga acg cac 288
 Ile Gly Val Thr Thr Ser Asp Ala Ile Cys Leu Gly Gly Gly Thr His
 85 90 95

aaa ggc aaa agt caa tgc aat gct ttg ctt aaa gcg gca ggc cgt tgc 336
 Lys Gly Lys Ser Gln Cys Asn Ala Leu Leu Lys Ala Ala Gly Arg Cys
 100 105 110

taa 339

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Gly	Ala	Gly	Ala	Thr	Thr	Phe	Leu	Leu	Val	Val	Pro	Ala	Leu	Leu	Pro	
			115				120					125				
ctt	tac	aag	cgt	ctg	cat	atg	aat	cct	tac	ctg	ctg	ttt	ttg	ctg	ctg	432
Leu	Tyr	Lys	Arg	Leu	His	Met	Asn	Pro	Tyr	Leu	Leu	Phe	Leu	Leu	Leu	
			130				135					140				
act	tcc	agt	gcg	gga	ttg	att	aac	ctt	ctg	ccg	tgg	ggc	ggg	ccg	acc	480
Thr	Ser	Ser	Ala	Gly	Leu	Ile	Asn	Leu	Leu	Pro	Trp	Gly	Gly	Pro	Thr	
					150					155					160	
ggg	cg	gtt	gca	agc	gtg	ttg	ggc	gca	gat	gtg	ggc	gaa	ttg	tat	aaa	528
Gly	Arg	Val	Ala	Ser	Val	Leu	Gly	Ala	Asp	Val	Gly	Glu	Leu	Tyr	Lys	
				165					170					175		
cct	ttg	ttg	acg	gtg	caa	att	atc	ggg	gtg	gtg	ttt	atc	ctt	gcg	ctg	576
Pro	Leu	Leu	Thr	Val	Gln	Ile	Ile	Gly	Val	Val	Phe	Ile	Leu	Ala	Leu	
			180					185					190			
tcc	ctg	ctt	ttg	ggt	gtg	cgt	gaa	aaa	agg	cg	att	gtc	cg	gag	ttg	624
Ser	Leu	Leu	Leu	Gly	Val	Arg	Glu	Lys	Arg	Arg	Ile	Val	Arg	Glu	Leu	
			195				200					205				
ggc	gcg	ttg	ccc	gcc	gtg	gcg	gat	ttg	ata	aag	ccg	gtg	cct	ttg	tcg	672
Gly	Ala	Leu	Pro	Ala	Val	Ala	Asp	Leu	Ile	Lys	Pro	Val	Pro	Leu	Ser	
			210			215					220					
gaa	gaa	gaa	caa	aaa	ttg	gcg	cgt	ccg	aaa	ctg	ttt	tgg	tgg	aat	gtc	720
Glu	Glu	Glu	Gln	Lys	Leu	Ala	Arg	Pro	Lys	Leu	Phe	Trp	Trp	Asn	Val	
					230				235						240	
ctg	ctg	ttt	ttg	gcg	gcg	atg	agc	ctg	ctt	ttt	tcg	ggc	atc	ttc	ccg	768
Leu	Leu	Phe	Leu	Ala	Ala	Met	Ser	Leu	Leu	Phe	Ser	Gly	Ile	Phe	Pro	
				245					250					255		
ccg	ggt	tat	gta	ttt	atg	ctg	gct	gca	acg	gcg	gcg	ttg	ctt	ttg	aat	816
Pro	Gly	Tyr	Val	Phe	Met	Leu	Ala	Ala	Thr	Ala	Ala	Leu	Leu	Leu	Asn	
			260					265					270			
tac	cgc	agc	ccg	cag	gaa	cag	atg	gag	cg	att	tat	gcc	cac	gcc	ggc	864
Tyr	Arg	Ser	Pro	Gln	Glu	Gln	Met	Glu	Arg	Ile	Tyr	Ala	His	Ala	Gly	
			275				280					285				
ggc	gcg	gtg	atg	atg	gcg	tcc	att	att	ttg	gcg	gca	ggt	acg	ttt	ttg	912
Gly	Ala	Val	Met	Met	Ala	Ser	Ile	Ile	Leu	Ala	Ala	Gly	Thr	Phe	Leu	
			290			295					300					
ggg	att	ttg	aag	ggt	gcg	ggg	atg	ttg	gac	gcg	att	tcc	aaa	gac	att	960
Gly	Ile	Leu	Lys	Gly	Ala	Gly	Met	Leu	Asp	Ala	Ile	Ser	Lys	Asp	Ile	
					310				315						320	
gtg	cat	atc	ctg	ccg	gac	gcg	ctg	ctg	cct	tat	ctg	cat	att	gcc	atc	1008
Val	His	Ile	Leu	Pro	Asp	Ala	Leu	Leu	Pro	Tyr	Leu	His	Ile	Ala	Ile	
				325					330					335		
ggt	gtg	ttg	ggc	att	ccg	ctt	gag	ttg	gtt	ttg	agt	acg	gac	gct	tat	1056
Gly	Val	Leu	Gly	Ile	Pro	Leu	Glu	Leu	Val	Leu	Ser	Thr	Asp	Ala	Tyr	
			340				345						350			
tat	ttc	gga	ctg	ttt	ccg	att	gtg	gag	cag	att	acc	tcg	cag	gcg	ggc	1104
Tyr	Phe	Gly	Leu	Phe	Pro	Ile	Val	Glu	Gln	Ile	Thr	Ser	Gln	Ala	Gly	
			355				360					365				

gtg gcg ccc gaa gca. ggt tat gcg atg ttg atc ggc agc ttc gtc 1152
 Val Ala Pro Glu Ala Gly Tyr Ala Met Leu Ile Gly Ser Ile Val
 370 375 380

ggc act ttt gtt acg ccg ctt tcg ccg gct ttg tgg atg ggc ttg ggt 1200
 Gly Thr Phe Val Thr Pro Leu Ser Pro Ala Leu Trp Met Gly Leu Gly
 385 390 395 400

ttg gcg aaa ttg tcg. atg ggc aaa cac atc cgt tat tcg ttt ttt tgg 1248
 Leu Ala Lys Leu Ser Met Gly Lys His Ile Arg Tyr Ser Phe Phe Trp
 405 410 415

gcg tgg ggt ttg tcg ctg. gcg ata ttg gcc agt tcg ata gcg gca gga 1296
 Ala Trp Gly Leu Ser Leu Ala Ile Leu Ala Ser Ser Ile Ala Ala Gly
 420 425 430

atc gtg cct ctg ccg taa 1314
 Ile Val Pro Leu Pro
 435

<210> 12
 <211> 437
 <212> PRT
 <213> Neisseria meningitidis

<400> 12
 Met Leu Thr Phe Ile Gly Leu Leu Ile Ile Gly Val Ile Val Trp Leu
 1 5 10 15

Leu Leu Thr Glu Lys Val Ser Pro Ile Ile Ala Leu Ile Leu Val Pro
 20 25 30

Leu Phe Gly Ala Leu Leu Ala Gly Phe Asp Val Ser Gln Leu Lys Glu
 35 40 45

Phe Tyr Ser Gly Gly Thr Lys Ser Val Met Gln Ile Val Ile Met Phe
 50 55 60

Met Phe Ser Ile Leu Phe Phe Gly Ile Met Asn Asp Val Gly Leu Phe
 65 70 75 80

Arg Pro Met Ile Gly Gly Leu Ile Lys Leu Thr Arg Gly Asn Ile Val
 85 90 95

Ala Val Ser Val Gly Thr Val Leu Val Ser Val Val Ala Gln Leu Asp
 100 105 110

Gly Ala Gly Ala Thr Thr Phe Leu Leu Val Val Pro Ala Leu Leu Pro
 115 120 125

Leu Tyr Lys Arg Leu His Met Asn Pro Tyr Leu Leu Phe Leu Leu Leu
 130 135 140

Thr Ser Ser Ala Gly Leu Ile Asn Leu Leu Pro Trp Gly Gly Pro Thr
 145 150 155 160

Gly Arg Val Ala Ser Val Leu Gly Ala Asp Val Gly Glu Leu Tyr Lys
 165 170 175

Pro Leu Leu Thr Val Gln Ile Ile Gly Val Val Phe Ile Leu Ala Leu
 180 185 190

Ser Leu Leu Leu Gly Val Arg Glu Lys Arg Arg Ile Val Arg Glu Leu
 195 200 205

093043-0060
 109400-EE40E360

Gly Ala Leu Pro Ala Ala Asp Leu Ile Lys Pro Val P Leu Ser
 210 215 220

Glu Glu Glu Gln Lys Leu Ala Arg Pro Lys Leu Phe Trp Trp Asn Val
 225 230 235 240

Leu Leu Phe Leu Ala Ala Met Ser Leu Leu Phe Ser Gly Ile Phe Pro
 245 250 255

Pro Gly Tyr Val Phe Met Leu Ala Ala Thr Ala Ala Leu Leu Leu Asn
 260 265 270

Tyr Arg Ser Pro Gln Glu Gln Met Glu Arg Ile Tyr Ala His Ala Gly
 275 280 285

Gly Ala Val Met Met Ala Ser Ile Ile Leu Ala Ala Gly Thr Phe Leu
 290 295 300

Gly Ile Leu Lys Gly Ala Gly Met Leu Asp Ala Ile Ser Lys Asp Ile
 305 310 315 320

Val His Ile Leu Pro Asp Ala Leu Leu Pro Tyr Leu His Ile Ala Ile
 325 330 335

Gly Val Leu Gly Ile Pro Leu Glu Leu Val Leu Ser Thr Asp Ala Tyr
 340 345 350

Tyr Phe Gly Leu Phe Pro Ile Val Glu Gln Ile Thr Ser Gln Ala Gly
 355 360 365

Val Ala Pro Glu Ala Ala Gly Tyr Ala Met Leu Ile Gly Ser Ile Val
 370 375 380

Gly Thr Phe Val Thr Pro Leu Ser Pro Ala Leu Trp Met Gly Leu Gly
 385 390 395 400

Leu Ala Lys Leu Ser Met Gly Lys His Ile Arg Tyr Ser Phe Phe Trp
 405 410 415

Ala Trp Gly Leu Ser Leu Ala Ile Leu Ala Ser Ser Ile Ala Ala Gly
 420 425 430

Ile Val Pro Leu Pro
 435

<210> 13
 <211> 1155
 <212> DNA
 <213> Neisseria meningitidis

<220>
 <221> CDS
 <222> (1)..(1152)

<400> 13
 atg ggc atc cat ctc gac ttc ggc att agt cct aaa acg ttc cga cag 48
 Met Gly Ile His Leu Asp Phe Gly Ile Ser Pro Lys Thr Phe Arg Gln
 1 5 10 15

act tat ctg tat caa aag ccc aag ctc ttt aaa gga gcg gtt cgg aat 96
 Thr Tyr Leu Tyr Gln Lys Pro Lys Leu Phe Lys Gly Ala Val Arg Asn
 20 25 30

ctc gaa gcc gca tct tgt aaa tat atc aac gag ata tac caa cga gca	144
Leu Glu Ala Ala Ser. Lys Tyr Ile Asn Glu Ile Tyr Glu Arg Ala	
35 40 45	
gac cca acc gca cgc ctg ttt cat ctg cgt aaa aaa ggc gca atc gtt	192
Asp Pro Thr Ala Pro Leu Phe His Leu Arg Lys Lys Gly Ala Ile Val	
50 55 60	
cct aaa gaa gaa tac gtc gaa agt ttc gac gat ttg ggc aaa act cgc	240
Pro Lys Glu Glu Tyr Val Glu Ser Phe Asp Asp Leu Gly Lys Thr Arg	
65 70 75 80	
tac cgt ttt att aaa tcc gtt atc tac gaa cat atg aag aat ggt gcg	288
Tyr Arg Phe Ile Lys Ser Val Ile Tyr Glu His Met Lys Asn Gly Ala	
85 90 95	
tcg tta gtc tat aac cat att aac aac gag ccg ttt tca gac cat atc	336
Ser Leu Val Tyr Asn His Ile Asn Asn Glu Pro Phe Ser Asp His Ile	
100 105 110	
gcc cgt caa gtc gcc cgc ttt gcc ggc gca cat act att gtt agt gga	384
Ala Arg Gln Val Ala Arg Phe Ala Gly Ala His Thr Ile Val Ser Gly	
115 120 125	
tat ctt gct ttt ggc agc gac gaa tct tat aaa aac cat tgg gat acc	432
Tyr Leu Ala Phe Gly Ser Asp Glu Ser Tyr Lys Asn His Trp Asp Thr	
130 135 140	
cgc gat gtg tat gcc atc cag ctt ttc ggc aag aaa cgt tgg caa ctt	480
Arg Asp Val Tyr Ala Ile Gln Leu Phe Gly Lys Lys Arg Trp Gln Leu	
145 150 155 160	
act gcc cct gat ttc cct atg cca ttg tat atg caa cag act aaa gat	528
Thr Ala Pro Asp Phe Pro Met Pro Leu Tyr Met Gln Gln Thr Lys Asp	
165 170 175	
act gat att tcc att cct gaa cat atc gat atg gat att atc ctt gaa	576
Thr Asp Ile Ser Ile Pro Glu His Ile Asp Met Asp Ile Ile Leu Glu	
180 185 190	
gca ggt gat gtc ctc tac atc cca cgc ggt tgg tgg cac aga cct atc	624
Ala Gly Asp Val Leu Tyr Ile Pro Arg Gly Trp Trp His Arg Pro Ile	
195 200 205	
ccg ctc ggc tgt gaa acc ttc cac ttc gct gtc ggt acc ttc ccg ccc	672
Pro Leu Gly Cys Glu Thr Phe His Phe Ala Val Gly Thr Phe Pro Pro	
210 215 220	
aac ggc tat aat tac ctc gag tgg cta atg aag aaa ttc ccc acg ata	720
Asn Gly Tyr Asn Tyr Leu Glu Trp Leu Met Lys Lys Phe Pro Thr Ile	
225 230 235 240	
gaa agt ctg cgc cac agt ttc tca gac tgg gag caa gat agg acg cgt	768
Glu Ser Leu Arg His Ser Phe Ser Asp Trp Glu Gln Asp Arg Thr Arg	
245 250 255	
atc aac gat act gcc gca caa att gct gcc atg att gcc gac ccc gtc	816
Ile Asn Asp Thr Ala Ala Gln Ile Ala Ala Met Ile Ala Asp Pro Val	
260 265 270	
aat tac gaa gcc ttc agt gaa gac ttc ctc ggc aaa gaa cgc acc gat	864
Asn Tyr Glu Ala Phe Ser Glu Asp Phe Leu Gly Lys Glu Arg Thr Asp	
275 280 285	
acc gct ttt cat ctc gaa cag ttc gcg aat ccc aac gct act ccg ctt	912
Thr Ala Phe His Leu Glu Gln Phe Ala Asn Pro Asn Ala Thr Pro Leu	

290	295	300	
tca gac gac gtc agg	aga cta aat gcc aat aat ttg	ga cg ttg	960
Ser Asp Asp Val Arg	Leu Arg Leu Asn Ala Asn Asn Leu Asp Thr Leu		
305	310	315 320	
gaa aag gga tat ttg att ggg aat ggg atg aag ata agc gta gat gaa			1008
Glu Lys Gly Tyr Leu Ile Gly Asn Gly Met Lys Ile Ser Val Asp Glu			
	325	330 335	
ttg ggg aaa aaa gtg tta gaa cac atc ggt aag aat gaa ccg tta ttg			1056
Leu Gly Lys Lys Val Leu Glu His Ile Gly Lys Asn Glu Pro Leu Leu			
	340	345 350	
ttg aaa aat cta ctg gtt aac ttc aat cag gga aaa cat gaa gaa gtt			1104
Leu Lys Asn Leu Leu Val Asn Phe Asn Gln Gly Lys His Glu Glu Val			
	355	360 365	
agg aag ttg att tat cag ttg ata gag tta gat ttt ctg gaa ctt ttg			1152
Arg Lys Leu Ile Tyr Gln Leu Ile Glu Leu Asp Phe Leu Glu Leu Leu			
	370	375 380	
tga			1155

<210> 14
 <211> 384
 <212> PRT
 <213> Neisseria meningitidis

<400> 14
 Met Gly Ile His Leu Asp Phe Gly Ile Ser Pro Lys Thr Phe Arg Gln
 1 5 10 15
 Thr Tyr Leu Tyr Gln Lys Pro Lys Leu Phe Lys Gly Ala Val Arg Asn
 20 25 30
 Leu Glu Ala Ala Ser Cys Lys Tyr Ile Asn Glu Ile Tyr Gln Arg Ala
 35 40 45
 Asp Pro Thr Ala Pro Leu Phe His Leu Arg Lys Lys Gly Ala Ile Val
 50 55 60
 Pro Lys Glu Glu Tyr Val Glu Ser Phe Asp Asp Leu Gly Lys Thr Arg
 65 70 75 80
 Tyr Arg Phe Ile Lys Ser Val Ile Tyr Glu His Met Lys Asn Gly Ala
 85 90 95
 Ser Leu Val Tyr Asn His Ile Asn Asn Glu Pro Phe Ser Asp His Ile
 100 105 110
 Ala Arg Gln Val Ala Arg Phe Ala Gly Ala His Thr Ile Val Ser Gly
 115 120 125
 Tyr Leu Ala Phe Gly Ser Asp Glu Ser Tyr Lys Asn His Trp Asp Thr
 130 135 140
 Arg Asp Val Tyr Ala Ile Gln Leu Phe Gly Lys Lys Arg Trp Gln Leu
 145 150 155 160
 Thr Ala Pro Asp Phe Pro Met Pro Leu Tyr Met Gln Gln Thr Lys Asp
 165 170 175
 Thr Asp Ile Ser Ile Pro Glu His Ile Asp Met Asp Ile Ile Leu Glu
 180 185 190

Ala Gly Asp Val Leu. Ile Pro Arg Gly Trp Trp His Arg Pro Ile
195 200 205

Pro Leu Gly Cys Glu Thr Phe His Phe Ala Val Gly Thr Phe Pro Pro
210 215 220

Asn Gly Tyr Asn Tyr Leu Glu Trp Leu Met Lys Lys Phe Pro Thr Ile
225 230 235 240

Glu Ser Leu Arg His Ser Phe Ser Asp Trp Glu Gln Asp Arg Thr Arg
245 250 255

Ile Asn Asp Thr Ala Ala Gln Ile Ala Ala Met Ile Ala Asp Pro Val
260 265 270

Asn Tyr Glu Ala Phe Ser Glu Asp Phe Leu Gly Lys Glu Arg Thr Asp
275 280 285

Thr Ala Phe His Leu Glu Gln Phe Ala Asn Pro Asn Ala Thr Pro Leu
290 295 300

Ser Asp Asp Val Arg Leu Arg Leu Asn Ala Asn Asn Leu Asp Thr Leu
305 310 315 320

Glu Lys Gly Tyr Leu Ile Gly Asn Gly Met Lys Ile Ser Val Asp Glu
325 330 335

Leu Gly Lys Lys Val Leu Glu His Ile Gly Lys Asn Glu Pro Leu Leu
340 345 350

Leu Lys Asn Leu Leu Val Asn Phe Asn Gln Gly Lys His Glu Glu Val
355 360 365

Arg Lys Leu Ile Tyr Gln Leu Ile Glu Leu Asp Phe Leu Glu Leu Leu
370 375 380

<210> 15
<211> 717
<212> DNA
<213> Neisseria meningitidis

<220>
<221> CDS
<222> (1)..(714)

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Met Asn Arg Pro Lys Gln Pro Phe Phe Arg Pro Glu Val Ala Val Ala
1 5 10 15

cgc caa acc agc ctg acg ggt aaa gtg att ctg aca cga ccg ttg tca 96
Arg Gln Thr Ser Leu Thr Gly Lys Val Ile Leu Thr Arg Pro Leu Ser
20 25 30

ttt tcc cta tgg acg aca ttt gca tcg ata tct gcg tta ttg att atc 144
Phe Ser Leu Trp Thr Thr Phe Ala Ser Ile Ser Ala Leu Leu Ile Ile
35 40 45

ctg ttt ttg ata ttt ggt aac tat acg cga aag aca aca gtg gag gga 192
Leu Phe Leu Ile Phe Gly Asn Tyr Thr Arg Lys Thr Thr Val Glu Gly
50 55 60

caa att tta cct gca tcg ggc gta atc agg gtg tat gca ccg gat acg 240

Gln	Ile	Leu	Pro	Ala	Ser	Gly	Val	Ile	Arg	Val	Tyr	Ala	Pro	Asp	Thr	
65										75					80	
ggg	aca	att	aca	gcg	aaa	ttc	gtg	gaa	gat	gga	gaa	aag	gtt	aag	gct	288
Gly	Thr	Ile	Thr	Ala	Lys	Phe	Val	Glu	Asp	Gly	Glu	Lys	Val	Lys	Ala	
				85					90					95		
ggc	gac	aag	cta	ttt	gcg	ctt	tcg	acc	tca	cgt	ttc	ggc	gca	gga	gat	336
Gly	Asp	Lys	Leu	Phe	Ala	Leu	Ser	Thr	Ser	Arg	Phe	Gly	Ala	Gly	Asp	
			100					105					110			
agc	gtg	cag	cag	cag	ttg	aaa	acg	gag	gca	gtt	ttg	aag	aaa	acg	ttg	384
Ser	Val	Gln	Gln	Gln	Leu	Lys	Thr	Glu	Ala	Val	Leu	Lys	Lys	Thr	Leu	
		115					120					125				
gca	gaa	cag	gaa	ctg	ggt	cgt	ctg	aag	ctg	ata	cac	ggg	aat	gaa	acg	432
Ala	Glu	Gln	Glu	Leu	Gly	Arg	Leu	Lys	Leu	Ile	His	Gly	Asn	Glu	Thr	
	130					135					140					
cgc	agc	ctt	aaa	gca	act	gtc	gaa	cgt	ttg	gaa	aac	cag	aaa	ctc	cat	480
Arg	Ser	Leu	Lys	Ala	Thr	Val	Glu	Arg	Leu	Glu	Asn	Gln	Lys	Leu	His	
145					150				155					160		
att	tcg	caa	cag	ata	gac	ggt	cag	aaa	agg	cgc	att	aga	ctt	gcg	gaa	528
Ile	Ser	Gln	Gln	Ile	Asp	Gly	Gln	Lys	Arg	Arg	Ile	Arg	Leu	Ala	Glu	
				165				170						175		
gaa	atg	ttg	cag	aaa	tat	cgt	ttc	cta	tcc	gcc	aat	gat	gca	gtg	cca	576
Glu	Met	Leu	Gln	Lys	Tyr	Arg	Phe	Leu	Ser	Ala	Asn	Asp	Ala	Val	Pro	
			180					185					190			
aaa	caa	gaa	atg	atg	aat	gtc	aag	gca	gag	ctt	tta	gag	cag	aaa	gcc	624
Lys	Gln	Glu	Met	Met	Asn	Val	Lys	Ala	Glu	Leu	Leu	Glu	Gln	Lys	Ala	
		195					200					205				
aaa	ctt	gat	gcc	tac	cgc	cga	gaa	gaa	gtc	ggg	ctg	ctt	cag	gaa	atc	672
Lys	Leu	Asp	Ala	Tyr	Arg	Arg	Glu	Glu	Val	Gly	Leu	Leu	Gln	Glu	Ile	
	210					215					220					
cgc	acg	cag	aat	ctg	aca	ttg	gcc	agc	ctc	ccc	caa	gcg	gca	tga		717
Arg	Thr	Gln	Asn	Leu	Thr	Leu	Ala	Ser	Leu	Pro	Gln	Ala	Ala			
225				230					235							

<210> 16
 <211> 238
 <212> PRT
 <213> Neisseria meningitidis

<400> 16
 Met Asn Arg Pro Lys Gln Pro Phe Phe Arg Pro Glu Val Ala Val Ala
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 Arg Gln Thr Ser Leu Thr Gly Lys Val Ile Leu Thr Arg Pro Leu Ser
 20 25 30
 Phe Ser Leu Trp Thr Thr Phe Ala Ser Ile Ser Ala Leu Leu Ile Ile
 35 40 45
 Leu Phe Leu Ile Phe Gly Asn Tyr Thr Arg Lys Thr Thr Val Glu Gly
 50 55 60
 Gln Ile Leu Pro Ala Ser Gly Val Ile Arg Val Tyr Ala Pro Asp Thr
 65 70 75 80
 Gly Thr Ile Thr Ala Lys Phe Val Glu Asp Gly Glu Lys Val Lys Ala

Gly Asp Lys Leu Phe Leu Ser Thr Ser Arg Phe Gly Ala Gly Asp
 100 105 110

Ser Val Gln Gln Gln Leu Lys Thr Glu Ala Val Leu Lys Lys Thr Leu
 115 120 125

Ala Glu Gln Glu Leu Gly Arg Leu Lys Leu Ile His Gly Asn Glu Thr
 130 135 140

Arg Ser Leu Lys Ala Thr Val Glu Arg Leu Glu Asn Gln Lys Leu His
 145 150 155 160

Ile Ser Gln Gln Ile Asp Gly Gln Lys Arg Arg Ile Arg Leu Ala Glu
 165 170 175

Glu Met Leu Gln Lys Tyr Arg Phe Leu Ser Ala Asn Asp Ala Val Pro
 180 185 190

Lys Gln Glu Met Met Asn Val Lys Ala Glu Leu Leu Glu Gln Lys Ala
 195 200 205

Lys Leu Asp Ala Tyr Arg Arg Glu Glu Val Gly Leu Leu Gln Glu Ile
 210 215 220

Arg Thr Gln Asn Leu Thr Leu Ala Ser Leu Pro Gln Ala Ala
 225 230 235

<210> 17

<211> 690

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(687)

<400> 17

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 Met Met Asn Val Glu Ala Glu Leu Leu Glu Gln Lys Ala Lys Leu Asp
 1 5 10 15

gcc tac ggc cga gaa gaa gcc ggg ctg ctt cag gaa atc cgc acg cag 96
 Ala Tyr Gly Arg Glu Glu Ala Gly Leu Leu Gln Glu Ile Arg Thr Gln
 20 25 30

aat ctg aca ttg gcc agc ctc ccc aaa cgg cat gag aca gaa caa agc 144
 Asn Leu Thr Leu Ala Ser Leu Pro Lys Arg His Glu Thr Glu Gln Ser
 35 40 45

cag ctt gaa cgc acc atg gcc gat att tct caa gaa gtt ttg gat ttt 192
 Gln Leu Glu Arg Thr Met Ala Asp Ile Ser Gln Glu Val Leu Asp Phe
 50 55 60

gaa atg cgc tct gaa caa atc atc cgt gca gga cgg tcg ggt tat ata 240
 Glu Met Arg Ser Glu Gln Ile Ile Arg Ala Gly Arg Ser Gly Tyr Ile
 65 70 75 80

gca ata ccg aac gtc gaa gtc gga cag cag gtt gat cct tcc aaa ctg 288
 Ala Ile Pro Asn Val Glu Val Gly Gln Gln Val Asp Pro Ser Lys Leu
 85 90 95

ctc ttg agc att gtt ccc gaa cgt acc gag cta tat gcc cat cta tat 336

0930433 001604

Leu	Leu	Ser	Ile	Val	Pro	Glu	Arg	Thr	Glu	Leu	Tyr	Ala	His	Leu	Tyr	
			100					105					11			
atc	ccc	agc	agt	gca	gca	ggc	ttt	atc	aag	ccg	aaa	gac	aag	gtt	gtc	384
Ile	Pro	Ser	Ser	Ala	Ala	Gly	Phe	Ile	Lys	Pro	Lys	Asp	Lys	Val	Val	
		115					120					125				
cta	cgt	tat	cag	gca	tat	ccc	tat	caa	aaa	ttc	ggg	ctt	gct	tcc	ggc	432
Leu	Arg	Tyr	Gln	Ala	Tyr	Pro	Tyr	Gln	Lys	Phe	Gly	Leu	Ala	Ser	Gly	
	130					135					140					
agt	gtc	gta	tca	gta	gca	aaa	acg	gca	ctg	ggc	aga	cag	gaa	ttg	tcg	480
Ser	Val	Val	Ser	Val	Ala	Lys	Thr	Ala	Leu	Gly	Arg	Gln	Glu	Leu	Ser	
145					150					155					160	
gga	ttg	ggc	atg	gta	tcc	tcc	gat	ttg	gcg	aag	agc	aac	gaa	cct	gtt	528
Gly	Leu	Gly	Met	Val	Ser	Ser	Asp	Leu	Ala	Lys	Ser	Asn	Glu	Pro	Val	
				165				170					175			
tat	ctc	gtg	aaa	ata	aaa	ccc	gac	aaa	cca	acc	atc	act	gca	tac	ggg	576
Tyr	Leu	Val	Lys	Ile	Lys	Pro	Asp	Lys	Pro	Thr	Ile	Thr	Ala	Tyr	Gly	
			180					185					190			
gag	gaa	aaa	ccg	ctg	caa	atc	ggc	atg	acg	ttg	gaa	gca	gac	atc	ctg	624
Glu	Glu	Lys	Pro	Leu	Gln	Ile	Gly	Met	Thr	Leu	Glu	Ala	Asp	Ile	Leu	
		195					200					205				
cac	gag	aaa	cgg	cgg	ctg	tac	gaa	tgg	gta	ttg	gag	ctg	att	tat	agt	672
His	Glu	Lys	Arg	Arg	Leu	Tyr	Glu	Trp	Val	Leu	Glu	Leu	Ile	Tyr	Ser	
	210					215					220					
atg	tcg	ggc	aaa	ctg	taa											690
Met	Ser	Gly	Lys	Leu												
225																
<210>	18															
<211>	229															
<212>	PRT															
<213>	Neisseria meningitidis															
<400>	18															
Met	Met	Asn	Val	Glu	Ala	Glu	Leu	Leu	Glu	Gln	Lys	Ala	Lys	Leu	Asp	
1				5					10					15		
Ala	Tyr	Gly	Arg	Glu	Glu	Ala	Gly	Leu	Leu	Gln	Glu	Ile	Arg	Thr	Gln	
			20					25					30			
Asn	Leu	Thr	Leu	Ala	Ser	Leu	Pro	Lys	Arg	His	Glu	Thr	Glu	Gln	Ser	
		35					40					45				
Gln	Leu	Glu	Arg	Thr	Met	Ala	Asp	Ile	Ser	Gln	Glu	Val	Leu	Asp	Phe	
	50					55					60					
Glu	Met	Arg	Ser	Glu	Gln	Ile	Ile	Arg	Ala	Gly	Arg	Ser	Gly	Tyr	Ile	
	65				70					75					80	
Ala	Ile	Pro	Asn	Val	Glu	Val	Gly	Gln	Gln	Val	Asp	Pro	Ser	Lys	Leu	
			85					90						95		
Leu	Leu	Ser	Ile	Val	Pro	Glu	Arg	Thr	Glu	Leu	Tyr	Ala	His	Leu	Tyr	
			100					105					110			
Ile	Pro	Ser	Ser	Ala	Ala	Gly	Phe	Ile	Lys	Pro	Lys	Asp	Lys	Val	Val	
		115					120					125				

Leu Arg Tyr Gln Ala Tyr Pro Tyr Gln Lys Phe Gly Leu Ala Ser Gly
 130 135 140
 Ser Val Val Ser Val Ala Lys Thr Ala Leu Gly Arg Gln Glu Leu Ser
 145 150 155 160
 Gly Leu Gly Met Val Ser Ser Asp Leu Ala Lys Ser Asn Glu Pro Val
 165 170 175
 Tyr Leu Val Lys Ile Lys Pro Asp Lys Pro Thr Ile Thr Ala Tyr Gly
 180 185 190
 Glu Glu Lys Pro Leu Gln Ile Gly Met Thr Leu Glu Ala Asp Ile Leu
 195 200 205
 His Glu Lys Arg Arg Leu Tyr Glu Trp Val Leu Glu Leu Ile Tyr Ser
 210 215 220
 Met Ser Gly Lys Leu
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 <213> Neisseria meningitidis

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 Met Lys Phe Phe Pro Ala Pro Cys Leu Val Ile Leu Ala Val Ile
 1 5 10 15
 . ccc ctt aaa acc tta gct gcc gat gaa aac gat gca gaa ctt atc cgt 96
 Pro Leu Lys Thr Leu Ala Ala Asp Glu Asn Asp Ala Glu Leu Ile Arg
 20 25 30
 tcc atg cag cgt cag cag cac ata gat gct gaa ttg tta act gat gca 144
 Ser Met Gln Arg Gln Gln His Ile Asp Ala Glu Leu Thr Asp Ala
 35 40 45
 aat gtc cgt ttc gag caa cca ttg gag aag aac aat tat gtc ctg agt 192
 Asn Val Arg Phe Glu Gln Pro Leu Glu Lys Asn Asn Tyr Val Leu Ser
 50 55 60
 gaa gat gaa aca ccg tgt act cgg gta aat tac att agt tta gat gat 240
 Glu Asp Glu Thr Pro Cys Thr Arg Val Asn Tyr Ile Ser Leu Asp Asp
 65 70 75 80
 aag acg gcg cgc aaa ttt tct ttt ctt cct tct gtg ctc atg aaa gaa 288
 Lys Thr Ala Arg Lys Phe Ser Phe Leu Pro Ser Val Leu Met Lys Glu
 85 90 95
 aca gct ttt aaa act ggg atg tgt tta ggt tcc aat aat ttg agc agg 336
 Thr Ala Phe Lys Thr Gly Met Cys Leu Gly Ser Asn Asn Leu Ser Arg
 100 105 110
 cta caa aaa gcc gcg caa cag ata ctg att gtg cgt ggc tac ctc act 384
 Leu Gln Lys Ala Ala Gln Gln Ile Leu Ile Val Arg Gly Tyr Leu Thr
 115 120 125
 tcc caa gct att atc caa cca cag aat atg gat tcg gga att ctg aaa 432

09040360
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Ser	Gln	Ala	Ile	Ile	Gln	Pro	Gln	Asn	Met	Asp	Ser	Gly	Ile	Leu	Lys	
130					135						140					
tta	cgg	gta	tca	gca	ggc	gaa	atc	agg	gat	atc	cgc	tat	gaa	gaa	aaa	480
Leu	Arg	Val	Ser	Ala	Gly	Glu	Ile	Arg	Asp	Ile	Arg	Tyr	Glu	Glu	Lys	
145					150					155					160	
cgg	gat	gcg	aag	tct	gcc	gag	ggc	agt	att	agt	gca	ttc	aat	aac	aaa	528
Arg	Asp	Ala	Lys	Ser	Ala	Glu	Gly	Ser	Ile	Ser	Ala	Phe	Asn	Asn	Lys	
				165					170					175		
ctt	ccc	tta	tat	agg	aac	aaa	att	ctc	aat	ctt	cgc	gat	gta	gag	cag	576
Leu	Pro	Leu	Tyr	Arg	Asn	Lys	Ile	Leu	Asn	Leu	Arg	Asp	Val	Glu	Gln	
			180					185					190			
ggc	ttg	gaa	aac	ctg	cgt	cgt	ttg	ccg	agt	gtt	aaa	aca	gat	att	cag	624
Gly	Leu	Glu	Asn	Leu	Arg	Arg	Leu	Pro	Ser	Val	Lys	Thr	Asp	Ile	Gln	
		195					200					205				
att	ata	ccg	tcc	gaa	gaa	gaa	ggc	aaa	agc	gat	tta	cag	atc	aaa	tgg	672
Ile	Ile	Pro	Ser	Glu	Glu	Glu	Gly	Lys	Ser	Asp	Leu	Gln	Ile	Lys	Trp	
	210					215					220					
cag	cag	aat	aaa	ccc	ata	cgg	ttc	agt	atc	ggt	ata	gat	gat	gcg	ggc	720
Gln	Gln	Asn	Lys	Pro	Ile	Arg	Phe	Ser	Ile	Gly	Ile	Asp	Asp	Ala	Gly	
225					230					235					240	
ggc	aaa	acg	acc	ggc	aaa	tat	caa	gga	aat	gtc	gct	tta	tcg	tcc	gat	768
Gly	Lys	Thr	Thr	Gly	Lys	Tyr	Gln	Gly	Asn	Val	Ala	Leu	Ser	Ser	Asp	
				245					250					255		
aac	cct	ttg	ggc	tta	agc	gat	tcg	ttt	tat	gtt	tca	tat	gga	cgc	ggt	816
Asn	Pro	Leu	Gly	Leu	Ser	Asp	Ser	Phe	Tyr	Val	Ser	Tyr	Gly	Arg	Gly	
			260					265					270			
ttg	gtg	cac	aaa	acg	gac	ttg	act	gct	gcc	acc	ggt	acg	gaa	act	gaa	864
Leu	Val	His	Lys	Thr	Asp	Leu	Thr	Ala	Ala	Thr	Gly	Thr	Glu	Thr	Glu	
		275					280					285				
agc	gga	tcc	aga	agt	tac	agc	gtg	cat	tat	tcg	gtg	ccc	gta	aaa	aaa	912
Ser	Gly	Ser	Arg	Ser	Tyr	Ser	Val	His	Tyr	Ser	Val	Pro	Val	Lys	Lys	
	290					295					300					
tgg	ctg	ttt	tct	ttt	aat	cac	aat	gga	cat	cgt	tac	cac	gaa	gca	acc	960
Trp	Leu	Phe	Ser	Phe	Asn	His	Asn	Gly	His	Arg	Tyr	His	Glu	Ala	Thr	
305					310					315					320	
gaa	ggc	tat	tcc	gtc	aat	tac	gat	tac	aac	ggc	aaa	caa	tat	cag	agc	1008
Glu	Gly	Tyr	Ser	Val	Asn	Tyr	Asp	Tyr	Asn	Gly	Lys	Gln	Tyr	Gln	Ser	
				325					330					335		
agc	ctg	gcc	gcc	gag	cgc	atg	ctt	tgg	ccc	ccc	agc	ttt	cct	caa	act	1056
Ser	Leu	Ala	Ala	Glu	Arg	Met	Leu	Trp	Pro	Pro	Ser	Phe	Pro			

ttg tct tac aaa' cgc	acc ggc atg cgc caa agt atg cc	ca cct	1248
Leu Ser Tyr Lys Arg	Thr Gly Met Arg Gln Ser Met Pro	Ala Pro	
405	410	415	
gaa gaa aac ggc ggc ggt act att cca gcc aca tcc cgt atg aaa atc			1296
Glu Glu Asn Gly Gly Gly Thr Ile Pro Ala Thr Ser Arg Met Lys Ile			
420	425	430	
ata acc gcc gga ttg gat gca gcg gcc ccg tct atg ttg ggc aaa cag			1344
Ile Thr Ala Gly Leu Asp Ala Ala Pro Ser Met Leu Gly Lys Gln			
435	440	445	
cag ttt ttc tac gca acc gcc att caa gct caa tgg aac aaa acg cct			1392
Gln Phe Phe Tyr Ala Thr Ala Ile Gln Ala Gln Trp Asn Lys Thr Pro			
450	455	460	
ttg gtt gcc caa gac aag ttg tct atc ggc agc cgc tac acc gtt cgc			1440
Leu Val Ala Gln Asp Lys Leu Ser Ile Gly Ser Arg Tyr Thr Val Arg			
465	470	475	480
gga ttt gat ggg gag cag agt ctt ttc gga gag cga ggt ttc tac tgg			1488
Gly Phe Asp Gly Glu Gln Ser Leu Phe Gly Glu Arg Gly Phe Tyr Trp			
485	490	495	
cag aat act tta act tgg tat ttt cat ccg aac cat cag ttc tat ctc			1536
Gln Asn Thr Leu Thr Trp Tyr Phe His Pro Asn His Gln Phe Tyr Leu			
500	505	510	
ggt gcg gac tat ggc cgc gta tct ggc gaa agt gca caa tat gta tcg			1584
Gly Ala Asp Tyr Gly Arg Val Ser Gly Glu Ser Ala Gln Tyr Val Ser			
515	520	525	
ggc aag cag ctg atg ggt gca gtg gtc ggc ttc aga gga ggg cat aaa			1632
Gly Lys Gln Leu Met Gly Ala Val Val Gly Phe Arg Gly Gly His Lys			
530	535	540	
gta ggc ggt atg ttt gct tat gat ctg ttt gcc ggc aag ccg ctt cat			1680
Val Gly Gly Met Phe Ala Tyr Asp Leu Phe Ala Gly Lys Pro Leu His			
545	550	555	560
aaa ccc aaa ggc ttt cag acg acc aac acc gtt tac ggc ttc aac ttg			1728
Lys Pro Lys Gly Phe Gln Thr Thr Asn Thr Val Tyr Gly Phe Asn Leu			
565	570	575	
aat tac agt ttc taa			1743
Asn Tyr Ser Phe			
580			

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<211> 580

<212> PRT

<213> Neisseria meningitidis

<400> 20

Met Lys Phe Phe Pro Ala Pro Cys Leu Leu Val Ile Leu Ala Val Ile
1 5 10 15

Pro Leu Lys Thr Leu Ala Ala Asp Glu Asn Asp Ala Glu Leu Ile Arg
20 25 30

Ser Met Gln Arg Gln Gln His Ile Asp Ala Glu Leu Leu Thr Asp Ala
35 40 45

Asn Val Arg Phe Glu Gln Pro Leu Glu Lys Asn Asn Tyr Val Leu Ser

60

Glu 65	Asp	Glu	Thr	Pro	Asp	Thr	Arg	Val	Asn	Tyr	Ile	Ser	Leu	Asp	Asp 80
Lys	Thr	Ala	Arg	Lys 85	Phe	Ser	Phe	Leu	Pro 90	Ser	Val	Leu	Met	Lys 95	Glu
Thr	Ala	Phe	Lys 100	Thr	Gly	Met	Cys	Leu 105	Gly	Ser	Asn	Asn	Leu 110	Ser	Arg
Leu	Gln	Lys 115	Ala	Ala	Gln	Gln	Ile 120	Leu	Ile	Val	Arg	Gly 125	Tyr	Leu	Thr
Ser	Gln 130	Ala	Ile	Ile	Gln	Pro 135	Gln	Asn	Met	Asp 140	Ser	Gly	Ile	Leu	Lys
Leu 145	Arg	Val	Ser	Ala	Gly 150	Glu	Ile	Arg	Asp 155	Ile	Arg	Tyr	Glu	Glu	Lys 160
Arg	Asp	Ala	Lys 165	Ser	Ala	Glu	Gly	Ser	Ile 170	Ser	Ala	Phe	Asn 175	Asn	Lys
Leu	Pro	Leu 180	Tyr	Arg	Asn	Lys	Ile 185	Leu	Asn	Leu	Arg	Asp 190	Val	Glu	Gln
Gly	Leu 195	Glu	Asn	Leu	Arg	Arg	Leu 200	Pro	Ser	Val	Lys	Thr 205	Asp	Ile	Gln
Ile 210	Ile	Pro	Ser	Glu	Glu	Glu 215	Gly	Lys	Ser	Asp 220	Leu	Gln	Ile	Lys	Trp
Gln 225	Gln	Asn	Lys	Pro	Ile 230	Arg	Phe	Ser	Ile 235	Gly	Ile	Asp	Asp	Ala	Gly 240
Gly	Lys	Thr	Thr 245	Gly	Lys	Tyr	Gln	Gly	Asn 250	Val	Ala	Leu	Ser	Ser 255	Asp
Asn	Pro	Leu 260	Gly	Leu	Ser	Asp	Ser	Phe 265	Tyr	Val	Ser	Tyr	Gly 270	Arg	Gly
Leu	Val 275	His	Lys	Thr	Asp	Leu 280	Thr	Ala	Ala	Thr	Gly	Thr 285	Glu	Thr	Glu
Ser 290	Gly	Ser	Arg	Ser	Tyr	Ser 295	Val	His	Tyr	Ser	Val 300	Pro	Val	Lys	Lys
Trp 305	Leu	Phe	Ser	Phe 310	Asn	His	Asn	Gly	His 315	Arg	Tyr	His	Glu	Ala	Thr 320
Glu	Gly	Tyr	Ser 325	Val	Asn	Tyr	Asp	Tyr	Asn 330	Gly	Lys	Gln	Tyr	Gln 335	Ser
Ser	Leu	Ala	Ala 340	Glu	Arg	Met	Leu	Trp 345	Pro	Pro	Ser	Phe	Pro 350	Gln	Thr
Ser	Val 355	Arg	Met	Lys	Leu	Trp 360	Thr	Arg	Gln	Thr	Tyr 365	Lys	Tyr	Ile	Asp
Asp 370	Ala	Glu	Ile	Glu	Val	Gln 375	Arg	Arg	Arg	Ser	Ala 380	Gly	Trp	Glu	Ala
Glu 385	Leu	Arg	His	Arg	Ala 390	Tyr	Leu	His	Arg 395	Trp	Gln	Leu	Asp	Gly	Lys 400
Leu	Ser	Tyr	Lys	Arg	Gly	Thr	Gly	Met	Arg	Gln	Ser	Met	Pro	Ala	Pro

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<212> DNA
<213> Neisseria meningitidis
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Met	Ile	Glu	Phe	Val	Arg	Ala	Lys	Lys	Arg	Leu	Leu	Trp	Ala	Phe	Val	
1				5					10					15		
ctt	ttg	ctt	gtg	tgg	acg	tgc	ggt	tac	cga	tac	gcc	gcc	gac	aag	gcc	96
Leu	Leu	Leu	Val	Trp	Thr	Cys	Gly	Tyr	Arg	Tyr	Ala	Ala	Asp	Lys	Ala	
			20					25					30			
gaa	gcg	aaa	caa	acc	gcc	ctg	att	gcc	acc	tat	cgg	cat	tct	tct	atg	144
Glu	Ala	Lys	Gln	Thr	Ala	Leu	Ile	Ala	Thr	Tyr	Arg	His	Ser	Ser	Met	
		35					40					45				
gtt	gcg	gcg	gaa	caa	tac	gcc	ttg	cag	ctt	aaa	aaa	gcg	cag	gac	gaa	192
Val	Ala	Ala	Glu	Gln	Tyr	Ala	Leu	Gln	Leu	Lys	Lys	Ala	Gln	Asp	Glu	
	50					55					60					
agg	cag	cgg	tgg	tac	gac	ttt	tcc	caa	aaa	caa	gga	aga	aag	ccc	gtg	240
Arg	Gln	Arg	Trp	Tyr	Asp	Phe	Ser	Gln	Lys	Gln	Gly	Arg	Lys	Pro	Val	
65					70					75				80		

aaa aaa cag tat ccg caa acg aaa aaa gcc ggc tat caa acc 288
 Lys Lys Gln Tyr Pro Gln Thr Lys Lys Ala Gly Tyr Leu Lys Thr
 85 90 95
 aag gaa gaa ctg ctt gcg gaa ttg gct tgc ctt aaa gcg gaa atg gct 336
 Lys Glu Glu Leu Leu Ala Glu Leu Ala Cys Leu Lys Ala Glu Met Ala
 100 105 110
 gcc cta aaa aag ctc gat gcc tta atc tat ggg aaa gaa gtg cgg cag 384
 Ala Leu Lys Lys Leu Asp Ala Leu Ile Tyr Gly Lys Glu Val Arg Gln
 115 120 125
 aaa gaa cgc aac tcg tcg cag ggt taa 411
 Lys Glu Arg Asn Ser Ser Gln Gly
 130 135

<210> 22
 <211> 136
 <212> PRT
 <213> Neisseria meningitidis

<400> 22
 Met Ile Glu Phe Val Arg Ala Lys Lys Arg Leu Leu Trp Ala Phe Val
 1 5 10 15
 Leu Leu Leu Val Trp Thr Cys Gly Tyr Arg Tyr Ala Ala Asp Lys Ala
 20 25 30
 Glu Ala Lys Gln Thr Ala Leu Ile Ala Thr Tyr Arg His Ser Ser Met
 35 40 45
 Val Ala Ala Glu Gln Tyr Ala Leu Gln Leu Lys Lys Ala Gln Asp Glu
 50 55 60
 Arg Gln Arg Trp Tyr Asp Phe Ser Gln Lys Gln Gly Arg Lys Pro Val
 65 70 75 80
 Lys Lys Gln Tyr Pro Pro Gln Thr Lys Lys Ala Gly Tyr Leu Lys Thr
 85 90 95
 Lys Glu Glu Leu Leu Ala Glu Leu Ala Cys Leu Lys Ala Glu Met Ala
 100 105 110
 Ala Leu Lys Lys Leu Asp Ala Leu Ile Tyr Gly Lys Glu Val Arg Gln
 115 120 125
 Lys Glu Arg Asn Ser Ser Gln Gly
 130 135

<210> 23
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 <212> DNA
 <213> Neisseria meningitidis

<220>
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 <222> (1)..(921)

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 atg caa tac agc aca ctg gca gga caa acc gac aac tcc ctc gtt tcc 48
 Met Gln Tyr Ser Thr Leu Ala Gly Gln Thr Asp Asn Ser Leu Val Ser
 1 5 10 15

09030133-084604
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Asp Val Val Glu Val Ala Pro Ser Tyr Asp Gln Ser Asp Ile Thr Ala
275 . . , 280 285

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aaa aag gac tga 924
Lys Lys Asp
305

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<210> 24
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<213> Neisseria meningitidis
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Ala Leu Lys Ile Leu Arg Gly Leu Thr Asp Leu Asp Ile Val Gly Met
260 265 270

Asp Val Val Glu Val Ala Pro Ser Tyr Asp Gln Ser Asp Ile Thr Ala
275 280 285

Leu Ala Gly Ala Thr Ile Ala Leu Glu Met Leu Tyr Leu Gln Gly Ala
290 295 300

Lys Lys Asp
305

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<210> 25
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<212> DNA
<213> Neisseria meningitidis
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atg	gag	cag	tcg	ggc	aaa	ttc	agt	tgg	tct	gcg	gca	gct	ttt	tgg	gac	48
Met	Glu	Gln	Ser	Gly	Lys	Phe	Ser	Trp	Ser	Ala	Ala	Ala	Phe	Trp	Asp	
1				5		10				15						
att	ccc	tac	ccc	gtc	acc	agg	cgg	att	gcc	tca	agt	ttg	tat	tcg	acc	96
Ile	Pro	Tyr	Pro	Val	Thr	Arg	Arg	Ile	Ala	Ser	Ser	Leu	Tyr	Ser	Thr	
			20		25				30							
gaa	tat	ttt	gtc	gta	tgc	ttt	ctg	cgt	ttg	atg	cca	ctc	tct	ccg	tgt	144
Glu	Tyr	Phe	Val	Val	Cys	Phe	Leu	Arg	Leu	Met	Pro	Leu	Ser	Pro	Cys	
		35		40				45								
aat	ctg	tat	ttt	gtc	acc	cat	ctg	cgt	acc	aat	gaa	tcg	gaa	ata	gaa	192
Asn	Leu	Tyr	Phe	Val	Thr	His	Leu	Arg	Thr	Asn	Glu	Ser	Glu	Ile	Glu	
50		55				60										
aga	tgg	tct	gct	gtt	ccc	tgc	caa	ata	gta	ttg	aac	gac	ggc	aag	tcg	240
Arg	Trp	Ser	Ala	Val	Pro	Cys	Gln	Ile	Val	Leu	Asn	Asp	Gly	Lys	Ser	
65		70				75				80						
gaa	ttc	ggc	gga	ttc	gca	ttt	gaa	gtg	caa	ctt	tcc	cta	aca	gaa	aaa	288
Glu	Phe	Gly	Gly	Phe	Ala	Phe	Glu	Val	Gln	Leu	Ser	Leu	Thr	Glu	Lys	
				85		90				95						
ggc	cag	tat	gcg	gta	gca	tac	gac	ctt	tcc	tgc	aag	aaa	gat	tgc	cat	336
Gly	Gln	Tyr	Ala	Val	Ala	Tyr	Asp	Leu	Ser	Cys	Lys	Lys	Asp	Cys	His	
			100		105				110							
gag	cta	cac	gca	act	gac	cca	agg	cga	acg	ata	cca	cat	cca	ata	cct	384
Glu	Leu	His	Ala	Thr	Asp	Pro	Arg	Arg	Thr	Ile	Pro	His	Pro	Ile	Pro	
		115		120				125								
gtc	ccg	cca	ctg	cac	cgt	cac	cga	aat	cgc	caa	aca	gct	taa			426
Val	Pro	Pro	Leu	His	Arg	His	Arg	Asn	Arg	Gln	Thr	Ala				
130		135				140										

<400> 26

Met Glu Gln Ser Gly Ile Phe Ser Trp Ser Ala Ala Ala Phe Asp
1 5 10 15

Ile Pro Tyr Pro Val Thr Arg Arg Ile Ala Ser Ser Leu Tyr Ser Thr
20 25 30

Glu Tyr Phe Val Val Cys Phe Leu Arg Leu Met Pro Leu Ser Pro Cys
35 40 45

Asn Leu Tyr Phe Val Thr His Leu Arg Thr Asn Glu Ser Glu Ile Glu
50 55 60

Arg Trp Ser Ala Val Pro Cys Gln Ile Val Leu Asn Asp Gly Lys Ser
65 70 75 80

Glu Phe Gly Gly Phe Ala Phe Glu Val Gln Leu Ser Leu Thr Glu Lys
85 90 95

Gly Gln Tyr Ala Val Ala Tyr Asp Leu Ser Cys Lys Lys Asp Cys His
100 105 110

Glu Leu His Ala Thr Asp Pro Arg Arg Thr Ile Pro His Pro Ile Pro
115 120 125

Val Pro Pro Leu His Arg His Arg Asn Arg Gln Thr Ala
130 135 140

<210> 27

<211> 351

<212> DNA

<213> Neisseria meningitidis

<220>

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<222> (1)..(348)

<400> 27

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Met Gln Asn Gly Gly Gly Lys Ile Tyr Gln Thr Ala Asp Asn Val Glu
1 5 10 15

ggg att atg ctg ttg aag gta gta cct gag cgt acc gtt tcg gca gat 96
Gly Ile Met Leu Leu Lys Val Val Pro Glu Arg Thr Val Ser Ala Asp
20 25 30

gca aaa acc aga gac ccg atg tgg gac aat gcg gct tta cag acc agc 144
Ala Lys Thr Arg Asp Pro Met Trp Asp Asn Ala Ala Leu Gln Thr Ser
35 40 45

gaa ggc gta aat ttt att gct cgt ttc cta gga ttt ttt agc gat ggg 192
Glu Gly Val Asn Phe Ile Ala Arg Phe Leu Gly Phe Phe Ser Asp Gly
50 55 60

gaa tac cgc tat gtg gat gtc ctg caa ccc aac cat tcc gat att att 240
Glu Tyr Arg Tyr Val Asp Val Leu Gln Pro Asn His Ser Asp Ile Ile
65 70 75 80

cgg tat tca ggt aaa gat ttt ccg cta aat caa ata ctt aac cat ata 288
Arg Tyr Ser Gly Lys Asp Phe Pro Leu Asn Gln Ile Leu Asn His Ile
85 90 95

cac ccc gcc cgt tat gcg gta acg ttc gaa aac aat gtc gat tcc aag 336
His Pro Ala Arg Tyr Ala Val Thr Phe Glu Asn Asn Val Asp Ser Lys

09830433.081604

ctg cgc agg cac tga
Leu Arg Arg His
115

351

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<210> 28
<211> 116
<212> PRT
<213> Neisseria meningitidis
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Gly Ile Met Leu Leu Lys Val Val Pro Glu Arg Thr Val Ser Ala Asp
             20             25             30
Ala Lys Thr Arg Asp Pro Met Trp Asp Asn Ala Ala Leu Gln Thr Ser
             35             40             45
Glu Gly Val Asn Phe Ile Ala Arg Phe Leu Gly Phe Phe Ser Asp Gly
             50             55             60
Glu Tyr Arg Tyr Val Asp Val Leu Gln Pro Asn His Ser Asp Ile Ile
  65             70             75             80
Arg Tyr Ser Gly Lys Asp Phe Pro Leu Asn Gln Ile Leu Asn His Ile
             85             90             95
His Pro Ala Arg Tyr Ala Val Thr Phe Glu Asn Asn Val Asp Ser Lys
             100             105             110
Leu Arg Arg His
             115

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<210> 29
<211> 1404
<212> DNA
<213> Neisseria meningitidis
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<220>  
<221> CDS  
<222> (1)..(1401)
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Met	Thr	Leu	Leu	Asn	Leu	Met	Ile	Met	Gln	Asp	Tyr	Gly	Ile	Ser	Val	
1				5					10					15		
tgc	ctg	aca	ctg	acg	ccc	tat	ttg	caa	cat	gaa	cta	ttt	tcg	gct	atg	96
Cys	Leu	Thr	Leu	Thr	Pro	Tyr	Leu	Gln	His	Glu	Leu	Phe	Ser	Ala	Met	
			20					25					30			
aaa	tcc	tat	ttt	tcc	aaa	tat	atc	cta	ccc	ggt	tca	ctt	ttt	acc	ttg	144
Lys	Ser	Tyr	Phe	Ser	Lys	Tyr	Ile	Leu	Pro	Val	Ser	Leu	Phe	Thr	Leu	
		35					40					45				
cca	cta	tcc	ctt	tcc	cca	tcc	ggt	tcg	gct	ttt	acg	ctg	cct	gaa	gca	192
Pro	Leu	Ser	Leu	Ser	Pro	Ser	Val	Ser	Ala	Phe	Thr	Leu	Pro	Glu	Ala	
	50					55					60					
tqg	cqg	gcg	gcg	cag	caa	cat	tcg	gct	gat	ttt	caa	gcg	tcc	cat	tac	240

[illegible]

gtc ggc gta cag ttg a [redacted] ttg ccg ctt tat acc ggc gga gaa [redacted] g tcg	1056
Val Gly Val Gln Leu A [redacted] Leu Pro Leu Tyr Thr Gly Gly Glu [redacted] Leu Ser	
340 345 350	
ggc aaa atc cat gaa gcc gaa gcg caa tac ggg gcc gcc gaa gca cag	1104
Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln	
355 360 365	
ctg acc gca acc gag cgg cac atc aaa ctc gcc gta cgc cag gct tat	1152
Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr	
370 375 380	
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Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val	
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Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln	
405 410 415	
tac ggc atc cgc aac cgg ctg gaa gta ata cgg gcg cgg cag gaa gtc	1296
Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val	
420 425 430	
gcc caa gca gaa cag aaa ctg gct caa gca cgg tat aaa ttc atg ctg	1344
Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu	
435 440 445	
gct tat ttg cgc ttg gtg aaa gag agc ggg tta ggg ttg gaa acg gta	1392
Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val	
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Phe Ala Glu	
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Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu	
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Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala	
50 55 60	
Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr	
65 70 75 80	
Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe	
85 90 95	
Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser	
100 105 110	
Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln	

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115	120	125
Thr Leu Phe Asp Ala A Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe		
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Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu		
145	150	155
Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp		
165	170	175
Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val		
180	185	190
Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp		
195	200	205
Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile		
210	215	220
Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr		
225	230	235
Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu		
245	250	255
Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp		
260	265	270
Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu		
275	280	285
Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg		
290	295	300
Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr		
305	310	315
Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser		
325	330	335
Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser		
340	345	350
Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln		
355	360	365
Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr		
370	375	380
Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val		
385	390	395
Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln		
405	410	415
Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val		
420	425	430
Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu		
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Phe Ala Glu		

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aca	ttg	ggc	att	tgc	gcg	ctt	tta	gcc	ttt	tgt	ttt	ggc	gcg	gcc	atc	96
Thr	Leu	Gly	Ile	Cys	Ala	Leu	Leu	Ala	Phe	Cys	Phe	Gly	Ala	Ala	Ile	
			20					25					30			
gca	tca	ggg	tat	cac	ttg	gaa	tat	gaa	tac	ggc	tac	cgt	tat	tct	gcc	144
Ala	Ser	Gly	Tyr	His	Leu	Glu	Tyr	Glu	Tyr	Gly	Tyr	Arg	Tyr	Ser	Ala	
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Val	Gly	Ala	Leu	Ala	Ser	Val	Val	Phe	Leu	Leu	Leu	Leu	Ala	Arg	Gly	
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ttc	ccg	cgc	gtt	tct	tca	gtt	gtt	tta	ctg	att	tac	gtc	ggc	aca	acc	240
Phe	Pro	Arg	Val	Ser	Ser	Val	Val	Leu	Leu	Ile	Tyr	Val	Gly	Thr	Thr	
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gcc	cta	tat	ttg	ccg	gtc	ggc	tgg	ctg	tat	ggg	gcg	ccg	tct	tat	cag	288
Ala	Leu	Tyr	Leu	Pro	Val	Gly	Trp	Leu	Tyr	Gly	Ala	Pro	Ser	Tyr	Gln	
				85					90					95		
ata	gtc	ggg	tcg	ata	ttg	gaa	agc	aat	cct	gcc	gag	gcg	cgt	gaa	ttt	336
Ile	Val	Gly	Ser	Ile	Leu	Glu	Ser	Asn	Pro	Ala	Glu	Ala	Arg	Glu	Phe	
			100					105					110			
gtc	ggc	aat	ctt	ccc	ggg	tcg	ctt	tat	ttt	gtg	cag	gca	tta	ttt	ttc	384
Val	Gly	Asn	Leu	Pro	Gly	Ser	Leu	Tyr	Phe	Val	Gln	Ala	Leu	Phe	Phe	
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att	ttt	ggc	ttg	aca	gtt	tgg	aga	tat	tgt	gta	tcg	ggg	ggg	gta	ttt	432
Ile	Phe	Gly	Leu	Thr	Val	Trp	Arg	Tyr	Cys	Val	Ser	Gly	Gly	Val	Phe	
	130					135					140					
gct	gac	gta	aaa	aac	tat	aaa	cgc	cgc	agc	aaa	ata	tgg	ctg	act	ata	480
Ala	Asp	Val	Lys	Asn	Tyr	Lys	Arg	Arg	Ser	Lys	Ile	Trp	Leu	Thr	Ile	
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Leu	Leu	Thr	Leu	Ile	Leu	Ser	Cys	Ala	Val	Met	Asp	Lys	Ile	Ala	Ser	
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gat	aaa	gat	ttg	cga	gaa	cct	gat	gcc	ggc	ctg	ttg	ttg	aat	att	ttc	576
Asp	Lys	Asp	Leu	Arg	Glu	Pro	Asp	Ala	Gly	Leu	Leu	Leu	Asn	Ile	Phe	
			180					185					190			
gac	ctg	tat	tac	gat	ttg	gct	tcc	gcg	ccg	gca	cca	ata	tgt	cgc	caa	624
Asp	Leu	Tyr	Tyr	Asp	Leu	Ala	Ser	Ala	Pro	Ala	Pro	Ile	Cys	Arg	Gln	
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gcg cgc cca cat ttt gga agc agc aaa aaa agc gtc aac atg gca tat 672
 Ala Arg Pro His Phe, C Ser Ser Lys Lys Ser Val Asn Met a Tyr
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ccg tca tgt tgc gcc caa gta taa 696
 Pro Ser Cys Cys Ala Gln Val
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Ala Ser Gly Tyr His Leu Glu Tyr Glu Tyr Gly Tyr Arg Tyr Ser Ala
 35 40 45

Val Gly Ala Leu Ala Ser Val Val Phe Leu Leu Leu Leu Ala Arg Gly
 50 55 60

Phe Pro Arg Val Ser Ser Val Val Leu Leu Ile Tyr Val Gly Thr Thr
 65 70 75 80

Ala Leu Tyr Leu Pro Val Gly Trp Leu Tyr Gly Ala Pro Ser Tyr Gln
 85 90 95

Ile Val Gly Ser Ile Leu Glu Ser Asn Pro Ala Glu Ala Arg Glu Phe
 100 105 110

Val Gly Asn Leu Pro Gly Ser Leu Tyr Phe Val Gln Ala Leu Phe Phe
 115 120 125

Ile Phe Gly Leu Thr Val Trp Arg Tyr Cys Val Ser Gly Gly Val Phe
 130 135 140

Ala Asp Val Lys Asn Tyr Lys Arg Arg Ser Lys Ile Trp Leu Thr Ile
 145 150 155 160

Leu Leu Thr Leu Ile Leu Ser Cys Ala Val Met Asp Lys Ile Ala Ser
 165 170 175

Asp Lys Asp Leu Arg Glu Pro Asp Ala Gly Leu Leu Leu Asn Ile Phe
 180 185 190

Asp Leu Tyr Tyr Asp Leu Ala Ser Ala Pro Ala Pro Ile Cys Arg Gln
 195 200 205

Ala Arg Pro His Phe Gly Ser Ser Lys Lys Ser Val Asn Met Ala Tyr
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Pro Ser Cys Cys Ala Gln Val
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acc aaa ggg ctg ttg ata aac ggt tac cat ttc acc gcc cac gcg acg	96
Thr Lys Gly Leu Leu Ile Asn Gly Tyr His Phe Thr Ala His Ala Thr	
20 25 30	
aat ctt tcg ctg ccg cag act ttg ggg ctg ccg gga gag ccg aac aat	144
Asn Leu Ser Leu Pro Gln Thr Leu Gly Leu Pro Gly Glu Pro Asn Asn	
35 40 45	
aac att gtc agc ttg gcg aag cag gcg ggt ttt cgg acg gcg tgg ctg	192
Asn Ile Val Ser Leu Ala Lys Gln Ala Gly Phe Arg Thr Ala Trp Leu	
50 55 60	
tct aat caa gga atg ttg ggg cat ttt gcc aac gaa att tcc acc tat	240
Ser Asn Gln Gly Met Leu Gly His Phe Ala Asn Glu Ile Ser Thr Tyr	
65 70 75 80	
gcc cta cgc agc gat tat ccg tgg ttt acc caa agg ggt gat tat ggc	288
Ala Leu Arg Ser Asp Tyr Pro Trp Phe Thr Gln Arg Gly Asp Tyr Gly	
85 90 95	
aaa agc gcg ggg ttg agc gac cgc ctt ttg ttg ccg gcg ttc aaa cgg	336
Lys Ser Ala Gly Leu Ser Asp Arg Leu Leu Leu Pro Ala Phe Lys Arg	
100 105 110	
gtt ttg ata gga aat gca ggc acg aag cct cgg ctg att gtg atg cac	384
Val Leu Ile Gly Asn Ala Gly Thr Lys Pro Arg Leu Ile Val Met His	
115 120 125	
ctg atg ggt tcg cac agt gat ttt tgc aca cgt ttg gat aag gat gcg	432
Leu Met Gly Ser His Ser Asp Phe Cys Thr Arg Leu Asp Lys Asp Ala	
130 135 140	
cgg cgg ttt cag tat caa act gaa aaa ata tcc tgc tat gtt tcc acc	480
Arg Arg Phe Gln Tyr Gln Thr Glu Lys Ile Ser Cys Tyr Val Ser Thr	
145 150 155 160	
atc gcg caa acc gat aaa ttt tta gaa gat aca gtt aag ata ttg aat	528
Ile Ala Gln Thr Asp Lys Phe Leu Glu Asp Thr Val Lys Ile Leu Asn	
165 170 175	
gaa aat aaa gaa agc tgg tct ttg gtt tac ttt tcc gac cac ggt ttg	576
Glu Asn Lys Glu Ser Trp Ser Leu Val Tyr Phe Ser Asp His Gly Leu	
180 185 190	
atg cat gtc ggt aaa ggc ggc gag cga acg ttg aca cat ggt gcg tgg	624
Met His Val Gly Lys Gly Gly Glu Arg Thr Leu Thr His Gly Ala Trp	
195 200 205	
aag cgt caa agc tac ggc gtg ccg ctg gtt aaa att tcg tcc gat gac	672
Lys Arg Gln Ser Tyr Gly Val Pro Leu Val Lys Ile Ser Ser Asp Asp	
210 215 220	
acg cgg cgc gaa atg att aaa gtg agg cgc agc gcg ttt aat ttt tta	720
Thr Arg Arg Glu Met Ile Lys Val Arg Arg Ser Ala Phe Asn Phe Leu	
225 230 235 240	

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225 230 235 240

Arg Gly Phe Gly Ser Thr Gly Ile Glu Thr Asp Glu Leu Pro Asp
 245 250 255

Asp Gly Tyr Asp Phe Trp Gly Asn Val Pro Asp Val Gln Gly Glu Gly
 260 265 270

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Tyr Ala Gly Lys Gly Lys Ser Thr Lys Asn Thr Ser Lys Lys
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Glu Ser Asn Pro Leu Ala Val Ala Gly Cys Val Asn Ala Tyr Phe Ala	
20 25 30	
 cga ttg gcc acc caa agc ggt ttc aaa gcc atc tat ctg tcc ggc ggc	144
Arg Leu Ala Thr Gln Ser Gly Phe Lys Ala Ile Tyr Leu Ser Gly Gly	
35 40 45	
 ggc gtg gca gcc tgt tct tgc ggt atc cct gat ttg ggc att acc aca	192
Gly Val Ala Ala Cys Ser Cys Gly Ile Pro Asp Leu Gly Ile Thr Thr	
50 55 60	
 atg gaa gat gtg ctg atc gac gca cga cgc att acg gac aac gtg gat	240
Met Glu Asp Val Leu Ile Asp Ala Arg Arg Ile Thr Asp Asn Val Asp	
65 70 75 80	
 acg cct ctg ctg gtg gac atc gat gtg ggt tgg ggc ggt gca ttc aat	288
Thr Pro Leu Leu Val Asp Ile Asp Val Gly Trp Gly Gly Ala Phe Asn	
85 90 95	
 att gcc cgt acc att cgc aac ttt gaa cgc gcc ggt gtt gca gcg gtt	336
Ile Ala Arg Thr Ile Arg Asn Phe Glu Arg Ala Gly Val Ala Val	
100 105 110	
 cac atc gaa gat cag gta gcg caa aaa cgc tgc ggc cac cgt ccg aac	384
His Ile Glu Asp Gln Val Ala Gln Lys Arg Cys Gly His Arg Pro Asn	
115 120 125	
 aaa gcc att gta tct aaa gat gaa atg gtc gac cgt atc aaa gct gcc	432
Lys Ala Ile Val Ser Lys Asp Glu Met Val Asp Arg Ile Lys Ala Ala	
130 135 140	
 gta gat gcg cgc gtt gat gag aac ttc gtg att atg gcg cgt acc gat	480
Val Asp Ala Arg Val Asp Glu Asn Phe Val Ile Met Ala Arg Thr Asp	
145 150 155 160	

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 Ala Leu Ala Val Glu Leu Asp Ala Ala Ile Glu Arg Ala Leu Ala
 165 170 175

tgt gtc gaa gcc ggt gcg gac atg att ttc cct gaa gcc atg acc gat 576
 Cys Val Glu Ala Gly Ala Asp Met Ile Phe Pro Glu Ala Met Thr Asp
 180 185 190

ttg aac atg tac cgc caa ttt gca gat gcg gtg aaa gtg ccc gtg ttg 624
 Leu Asn Met Tyr Arg Gln Phe Ala Asp Ala Val Lys Val Pro Val Leu
 195 200 205

gcg aac att acc gag ttt ggt tcc act ccg ctt tat acc caa agc gag 672
 Ala Asn Ile Thr Glu Phe Gly Ser Thr Pro Leu Tyr Thr Gln Ser Glu
 210 215 220

ctg gct gaa aac ggc gtg tcg ctg gtg ctg tat ccg ctg tca tcg ttc 720
 Leu Ala Glu Asn Gly Val Ser Leu Val Leu Tyr Pro Leu Ser Ser Phe
 225 230 235 240

cgt gca gca agc aaa gcc gct ctg aat gtt tac gaa gcg att atg cgc 768
 Arg Ala Ala Ser Lys Ala Ala Leu Asn Val Tyr Glu Ala Ile Met Arg
 245 250 255

gat ggc act tca ggc ggc ggt ggt gga cag tat gca aac ccg tgc cga 816
 Asp Gly Thr Ser Gly Gly Gly Gly Gly Gln Tyr Ala Asn Pro Cys Arg
 260 265 270

gct gta cga gca tct gaa cta tca tgc ctt cga gca aaa act gga taa 864
 Ala Val Arg Ala Ser Glu Leu Ser Cys Leu Arg Ala Lys Thr Gly
 275 280 285

<210> 36

<211> 287

<212> PRT

<213> Neisseria meningitidis

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Arg Leu Ala Thr Gln Ser Gly Phe Lys Ala Ile Tyr Leu Ser Gly Gly
 35 40 45

Gly Val Ala Ala Cys Ser Cys Gly Ile Pro Asp Leu Gly Ile Thr Thr
 50 55 60

Met Glu Asp Val Leu Ile Asp Ala Arg Arg Ile Thr Asp Asn Val Asp
 65 70 75 80

Thr Pro Leu Leu Val Asp Ile Asp Val Gly Trp Gly Gly Ala Phe Asn
 85 90 95

Ile Ala Arg Thr Ile Arg Asn Phe Glu Arg Ala Gly Val Ala Ala Val
 100 105 110

His Ile Glu Asp Gln Val Ala Gln Lys Arg Cys Gly His Arg Pro Asn
 115 120 125

Lys Ala Ile Val Ser Lys Asp Glu Met Val Asp Arg Ile Lys Ala Ala
 130 135 140

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Val Asp Ala Arg Val Asn Glu Asn Phe Val Ile Met Ala Arg Thr Asp
 145 155 160

Ala Leu Ala Val Glu Gly Leu Asp Ala Ala Ile Glu Arg Ala Gln Ala
 165 170 175

Cys Val Glu Ala Gly Ala Asp Met Ile Phe Pro Glu Ala Met Thr Asp
 180 185 190

Leu Asn Met Tyr Arg Gln Phe Ala Asp Ala Val Lys Val Pro Val Leu
 195 200 205

Ala Asn Ile Thr Glu Phe Gly Ser Thr Pro Leu Tyr Thr Gln Ser Glu
 210 215 220

Leu Ala Glu Asn Gly Val Ser Leu Val Leu Tyr Pro Leu Ser Ser Phe
 225 230 235 240

Arg Ala Ala Ser Lys Ala Ala Leu Asn Val Tyr Glu Ala Ile Met Arg
 245 250 255

Asp Gly Thr Ser Gly Gly Gly Gly Gly Gln Tyr Ala Asn Pro Cys Arg
 260 265 270

Ala Val Arg Ala Ser Glu Leu Ser Cys Leu Arg Ala Lys Thr Gly
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 1 5 10 15

ctt tca gac tgc ctt tca aca aat ccg cat cgg tcg tct gaa aac ccg 96
 Leu Ser Asp Cys Leu Ser Thr Asn Pro His Arg Ser Ser Glu Asn Pro
 20 25 30

aaa ccc ata aaa aca caa agg aga aat acc atg act gaa act act caa 144
 Lys Pro Ile Lys Thr Gln Arg Arg Asn Thr Met Thr Glu Thr Thr Gln
 35 40 45

acc ccg acc ctc aaa cct aaa aaa tcc gtt gcg ctt tct ggc gtt gcg 192
 Thr Pro Thr Leu Lys Pro Lys Lys Ser Val Ala Leu Ser Gly Val Ala
 50 55 60

gcc ggt aat acc gct ttg tgt acc gtt ggc cgt acc ggc aac gat ttg 240
 Ala Gly Asn Thr Ala Leu Cys Thr Val Gly Arg Thr Gly Asn Asp Leu
 65 70 75 80

agc tat cgc ggt tac gac att ctg gat ttg gca caa aaa tgt gag ttt 288
 Ser Tyr Arg Gly Tyr Asp Ile Leu Asp Leu Ala Gln Lys Cys Glu Phe
 85 90 95

gaa gaa gtt gcc cac ctg ctg att cac ggc cat tta ccc aac aaa ttc 336
 Glu Glu Val Ala His Leu Leu Ile His Gly His Leu Pro Asn Lys Phe
 100 105 110

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Lys Pro Ile Lys Thr Gln Arg Arg Asn Thr Met Thr Glu Thr Thr Gln
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 Ala Gly Asn Thr Ala Leu Cys Thr Val Gly Arg Thr Gly Asn Asp Leu
 65 70 75 80
 Ser Tyr Arg Gly Tyr Asp Ile Leu Asp Leu Ala Gln Lys Cys Glu Phe
 85 90 95
 Glu Glu Val Ala His Leu Leu Ile His Gly His Leu Pro Asn Lys Phe
 100 105 110
 Glu Leu Ala Ala Tyr Lys Ala Lys Leu Lys Ser Met Arg Gly Leu Pro
 115 120 125
 Ile Arg Val Ile Lys Val Leu Glu Ser Leu Pro Ala His Thr His Pro
 130 135 140
 Met Asp Val Met Arg Thr Gly Val Ser Met Leu Gly Cys Val His Pro
 145 150 155 160
 Glu Arg Glu Gly His Pro Glu Ser Glu Ala Arg Asp Ile Ala Asp Lys
 165 170 175
 Leu Ile Ala Ser Leu Gly Ser Ile Leu Leu Tyr Trp Tyr Gln Tyr Ser
 180 185 190
 His Asn Gly Lys Arg Ile Glu Val Glu Ser Glu Glu Glu Thr Ile Gly
 195 200 205
 Gly His Phe Leu His Leu Leu His Gly Lys Arg Pro Ser Glu Ser His
 210 215 220
 Ile Lys Ala Met His Val Ser Leu Ile Leu Tyr Ala Glu His Glu Phe
 225 230 235 240
 Asn Ala Ser Thr Phe Thr Ala Arg Val Ile Ala Gly Thr Gly Ser Asp
 245 250 255
 Met Tyr Ser Ser Ile Thr Gly Ala Ile Gly Ala Leu Lys Gly Pro Lys
 260 265 270
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 Met Pro Thr Lys Pro Lys Pro Thr Ser Ala Asn Ala Ser Ala Ala Lys
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 Lys Ser
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tta Leu	ctg Leu	atg Met	gga Gly 20	ata Ile	ttc Phe	ttg Leu	gca Ala	gtt Val 25	tct Ser	gcg Ala	gcc Ala	ctt Leu	ctg Leu 30	aat Asn	gca Ala	96
acc Thr	atc Ile	ggc Gly 35	ata Ile	ttc Phe	agc Ser	aag Lys	ata Ile 40	ttg Leu	atg Met	gag Glu	cag Gln	ggc Gly 45	ttg Leu	tct Ser	gtt Val	144
cag Gln	cat His 50	att Ile	gca Ala	ttt Phe	ttg Leu	aaa Lys 55	act Thr	ttg Leu	aca Thr	ggc Gly	ttc Phe 60	gtg Val	ttt Phe	atc Ile	agc Ser	192
att Ile 65	ttg Leu	ctt Leu	tgc Cys	cgt Arg	acc Thr 70	ggc Gly	ttt Phe	acc Thr	aga Arg	cag Gln 75	att Ile	gcg Ala	gat Asp	att Ile	tca Ser 80	240
aga Arg	aag Lys	aaa Lys	gag Glu	gca Ala 85	att Ile	ttg Leu	ccg Pro	ttg Leu	ctg Leu 90	tta Leu	aaa Lys	gta Val	gca Ala	att Ile 95	tgt Cys	288
gct Ala	ttt Phe	ttc Phe	gga Gly 100	att Ile	tat Tyr	acg Thr	ttg Leu	ttt Phe 105	ttc Phe	ttt Phe	gaa Glu	acc Thr	aca Thr 110	gct Ala	tat Tyr	336
caa Gln	tat Tyr	ggc Gly 115	aat Asn	gct Ala	gcg Ala	aat Asn	gta Val 120	gta Val	gtt Val	gta Val	tta Leu	atg Met 125	gca Ala	tcg Ser	gct Ala	384
gcc Ala 130	gta Val	tct Ser	gcc Ala	ttg Leu	ata Ile	ttg Leu 135	gac Asp	agc Ser	ata Ile	ctg Leu	tta Leu 140	gat Asp	gaa Glu	cgt Arg	att Ile	432
tgc Cys 145	att Ile	tct Ser	tca Ser	gtc Val	gtc Val 150	ggc Gly	gtg Val	ggc Gly	ttg Leu	gca Ala 155	gta Val	ttg Leu	ggg Gly	atc Ile	gca Ala 160	480
atg Met	att Ile	tct Ser	tgg Trp	act Thr 165	gga Gly	gaa Glu	gga Gly	agt Ser	tta Leu 170	ggg Gly	ttg Leu	att Ile	ctg Leu	aat Asn 175	gcc Ala	528
gca Ala	ctg Leu	gcg Ala	ggc Gly 180	tcg Ser	ggc Gly	tac Tyr	ggc Gly 185	tgt Cys	ttt Phe	tcc Ser	gtt Val	ttg Leu	att Ile 190	aag Lys	aaa Lys	576
ttc Phe	ggc Gly 195	cta Leu	aac Asn	ggc Gly	ggc Gly	att Ile 200	tat Tyr	ttg Leu	aca Thr	cgg Arg	ata Ile	ttg Leu 205	atg Met	ttt Phe	ttt Phe	624
gga Gly 210	agt Ser	att Ile	ttt Phe	ttg Leu	ttt Phe	atc Ile 215	cct Pro	tca Ser	ttg Leu	gaa Glu	ggc Gly 220	att Ile	gag Glu	gat Asp	ata Ile	672
cat His 225	tgg Trp	caa Gln	tgg Trp	tct Ser	ttt Phe 230	att Ile	ccg Pro	cca Pro	ctc Leu	ttg Leu 235	gca Ala	ttg Leu	tct Ser	tta Leu	ttg Leu 240	720
ccg Pro	acg Thr	att Ile	tta Leu	gga Gly 245	ttt Phe	tat Tyr	tgt Cys	aca Thr	act Thr 250	aaa Lys	gca Ala	ttg Leu	gat Asp	tat Tyr 255	ttg Leu	768
agt Ser	gct Ala	gcg Ala	aag Lys	gta Val	cag Gln	gta Val	act Thr	gaa Glu	ttg Leu	gcc Ala	gag Glu	cca Pro	ttg Leu	ttt Phe	gct Ala	816

aca aaa acc gca.ttt. aat gtg gac gtg att ccg gcg gg ac ggc	528
Thr Lys Thr Ala Phe Glu Asn Val Asp Val Ile Pro Ala Gly Asn Gly	
165 170 175	
atc atg cac caa atc aat cta gaa aaa atg tcg ccc gtc gtc caa gtc	576
Ile Met His Gln Ile Asn Leu Glu Lys Met Ser Pro Val Val Gln Val	
180 185 190	
aaa aac ggc gtg gcg ttc ccc gat acc tgc gtc ggc acg gat tcg cac	624
Lys Asn Gly Val Ala Phe Pro Asp Thr Cys Val Gly Thr Asp Ser His	
195 200 205	
acg ccg cac gtc gat gcg ctg ggc gtg att tcc gtg ggc gtg ggc gga	672
Thr Pro His Val Asp Ala Leu Gly Val Ile Ser Val Gly Val Gly Gly	
210 215 220	
ttg gaa gcg gaa acc gtg atg ctg ggt cgc gcg tcc atg atg cgc ctg	720
Leu Glu Ala Glu Thr Val Met Leu Gly Arg Ala Ser Met Met Arg Leu	
225 230 235 240	
ccc gat att gtc ggc gtt gag ctg aac ggc aaa cgg cag gcg ggc att	768
Pro Asp Ile Val Gly Val Glu Leu Asn Gly Lys Arg Gln Ala Gly Ile	
245 250 255	
acg gcg acg gat att gtg ttg gca ctg acc gag ttt ctg cgc aaa gaa	816
Thr Ala Thr Asp Ile Val Leu Ala Leu Thr Glu Phe Leu Arg Lys Glu	
260 265 270	
cgc gtg gtc ggg gcg ttt gtc gaa ttc ttc ggc gag ggc gcg aga agc	864
Arg Val Val Gly Ala Phe Val Glu Phe Phe Gly Glu Gly Ala Arg Ser	
275 280 285	
ctg tct atc ggc gac cgc gcg acc att tcc aac atg acg ccg gag ttc	912
Leu Ser Ile Gly Asp Arg Ala Thr Ile Ser Asn Met Thr Pro Glu Phe	
290 295 300	
ggc gcg act gcc gcg atg ttc gct att gat gag caa acc att gat tat	960
Gly Ala Thr Ala Ala Met Phe Ala Ile Asp Glu Gln Thr Ile Asp Tyr	
305 310 315 320	
ttg aaa ctg acc gga cgc gac gac gcg cag gtg aaa ttg gtg gaa acc	1008
Leu Lys Leu Thr Gly Arg Asp Asp Ala Gln Val Lys Leu Val Glu Thr	
325 330 335	
tac gcc aaa acc gca ggc tta tgg gca gat gcc ttg aaa acc gcc gtt	1056
Tyr Ala Lys Thr Ala Gly Leu Trp Ala Asp Ala Leu Lys Thr Ala Val	
340 345 350	
tat ccg cgc gtt ttg aaa ttt gat ttg agc agc gta acg cgc aat atg	1104
Tyr Pro Arg Val Leu Lys Phe Asp Leu Ser Ser Val Thr Arg Asn Met	
355 360 365	
gca ggc ccg agc aac ccg cac gcg cgt ttt gcg acc gcc gat ttg gcc	1152
Ala Gly Pro Ser Asn Pro His Ala Arg Phe Ala Thr Ala Asp Leu Ala	
370 375 380	
agc aaa ggc ttg gct aaa cct tac gaa gag cct tca gac ggc caa atg	1200
Ser Lys Gly Leu Ala Lys Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met	
385 390 395 400	
ccc gac ggc gcg gtc atc atc gcc gcg att acc agt tgc acc aac act	1248
Pro Asp Gly Ala Val Ile Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr	
405 410 415	
tcc aac ccg cgc aac gtt gtt gcc gcc gcg ctc ttg gcg cgc aac gcc	1296

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cgc gct acc ttc gcc	ccg aaa ctg ttt aac gaa atg	aaa aac	2112
Arg Ala Thr Phe Ala	Pro Lys Leu Phe Asn Glu Met Val	Lys Asn	
690	695	700	
gaa gac ggc agc gtg cgc	caa ggc tcg ttc gcc cgc gtc gaa ccc gaa		2160
Glu Asp Gly Ser Val Arg	Gln Gly Ser Phe Ala Arg Val Glu Pro Glu		
705	710	715	720
ggc gaa acc atg cgc atg tgg gaa gcc atc gaa acc tat atg aac cgc			2208
Gly Glu Thr Met Arg Met Trp Glu Ala Ile Glu Thr Tyr Met Asn Arg			
	725	730	735
aaa cag ccg ctc atc atc att gcc ggt gcg gac tat ggt caa ggc tca			2256
Lys Gln Pro Leu Ile Ile Ile Ala Gly Ala Asp Tyr Gly Gln Gly Ser			
	740	745	750
agc cgc gac tgg gct gca aaa ggc gta cgc ctc gcc ggc gta gaa gcg			2304
Ser Arg Asp Trp Ala Ala Lys Gly Val Arg Leu Ala Gly Val Glu Ala			
	755	760	765
att gtt gcc gaa ggc ttc gag cgt atc cac cgc acc aac ctt atc ggc			2352
Ile Val Ala Glu Gly Phe Glu Arg Ile His Arg Thr Asn Leu Ile Gly			
	770	775	780
atg ggc gtg ttg ccg ctg cag ttc aaa ccc gac acc aac cgc cat acc			2400
Met Gly Val Leu Pro Leu Gln Phe Lys Pro Asp Thr Asn Arg His Thr			
	785	790	800
ctg caa ctg gac ggt acg gaa acc tac gac gtg gtc ggc gaa cgc aca			2448
Leu Gln Leu Asp Gly Thr Glu Thr Tyr Asp Val Val Gly Glu Arg Thr			
	805	810	815
ccg cgc tgc gac ctg acc ctc gtg att cac cgt aaa aac ggc gaa acc			2496
Pro Arg Cys Asp Leu Thr Leu Val Ile His Arg Lys Asn Gly Glu Thr			
	820	825	830
gtc gaa gtt ccc gtt acc tgc cgc ctc gat act gca gaa gaa gta ttg			2544
Val Glu Val Pro Val Thr Cys Arg Leu Asp Thr Ala Glu Glu Val Leu			
	835	840	845
gta tat gaa gcc ggc ggc gtg ttg caa cgg ttt gca cag gat ttt ttg			2592
Val Tyr Glu Ala Gly Gly Val Leu Gln Arg Phe Ala Gln Asp Phe Leu			
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gaa ggc aac gcg gct tag			2610
Glu Gly Asn Ala Ala			
865			

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 <213> Neisseria meningitidis

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 Tyr Asp Lys Leu Pro Tyr Thr Ser Arg Ile Leu Ala Glu Asn Leu Val
 35 40 45
 Asn Arg Ala Asp Lys Val Asp Leu Pro Thr Leu Gln Ser Trp Leu Gly

50

55

60

Gln Leu Ile Glu Gly Lys Gln Glu Ile Asp Phe Pro Trp Tyr Pro Ala
 65 70 75 80
 Arg Val Val Cys His Asp Ile Leu Gly Gln Thr Ala Leu Val Asp Leu
 85 90 95
 Ala Gly Leu Arg Asp Ala Ile Ala Glu Lys Gly Gly Asp Pro Ala Lys
 100 105 110
 Val Asn Pro Val Val Ala Lys Pro Ser Phe Ile Val Asp His Ser Leu
 115 120 125
 Ala Val Glu Cys Gly Gly Tyr Asp Pro Asp Ala Phe Arg Lys Asn Arg
 130 135 140
 Gln Ile Glu Asp Arg Arg Asn Glu Asp Arg Phe His Phe Ile Asn Trp
 145 150 155 160
 Thr Lys Thr Ala Phe Glu Asn Val Asp Val Ile Pro Ala Gly Asn Gly
 165 170 175
 Ile Met His Gln Ile Asn Leu Glu Lys Met Ser Pro Val Val Gln Val
 180 185 190
 Lys Asn Gly Val Ala Phe Pro Asp Thr Cys Val Gly Thr Asp Ser His
 195 200 205
 Thr Pro His Val Asp Ala Leu Gly Val Ile Ser Val Gly Val Gly Gly
 210 215 220
 Leu Glu Ala Glu Thr Val Met Leu Gly Arg Ala Ser Met Met Arg Leu
 225 230 235 240
 Pro Asp Ile Val Gly Val Glu Leu Asn Gly Lys Arg Gln Ala Gly Ile
 245 250 255
 Thr Ala Thr Asp Ile Val Leu Ala Leu Thr Glu Phe Leu Arg Lys Glu
 260 265 270
 Arg Val Val Gly Ala Phe Val Glu Phe Phe Gly Glu Gly Ala Arg Ser
 275 280 285
 Leu Ser Ile Gly Asp Arg Ala Thr Ile Ser Asn Met Thr Pro Glu Phe
 290 295 300
 Gly Ala Thr Ala Ala Met Phe Ala Ile Asp Glu Gln Thr Ile Asp Tyr
 305 310 315 320
 Leu Lys Leu Thr Gly Arg Asp Asp Ala Gln Val Lys Leu Val Glu Thr
 325 330 335
 Tyr Ala Lys Thr Ala Gly Leu Trp Ala Asp Ala Leu Lys Thr Ala Val
 340 345 350
 Tyr Pro Arg Val Leu Lys Phe Asp Leu Ser Ser Val Thr Arg Asn Met
 355 360 365
 Ala Gly Pro Ser Asn Pro His Ala Arg Phe Ala Thr Ala Asp Leu Ala
 370 375 380
 Ser Lys Gly Leu Ala Lys Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met
 385 390 395 400
 Pro Asp Gly Ala Val Ile Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr

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 09043 0840

[illegible]

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Pro Glu Asp Cys Phe
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<212> PRT
<213> Neisseria meningitidis

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Lys	Gly	Val	Phe	Phe	Lys	Arg	Ser	Asp	Leu	Pro	Glu	Ala	Ala	Arg	Glu	
			20					25					30			
Ala	Gly	Ser	Ala	Arg	Asp	Lys	Ile	Leu	Leu	Arg	Val	Leu	Gly	Ser	Pro	
		35					40					45				
Asp	Pro	Tyr	Gly	Lys	Gln	Ile	Asp	Gly	Leu	Gly	Asn	Ala	Ser	Ser	Ser	
	50					55					60					
Thr	Ser	Lys	Ala	Val	Ile	Leu	Asp	Lys	Ser	Glu	Arg	Thr	Asp	His	Asp	
	65				70					75					80	
Val	Asp	Tyr	Leu	Phe	Gly	Gln	Val	Ser	Ile	Asp	Lys	Pro	Phe	Val	Asp	
				85					90					95		
Trp	Ser	Gly	Asn	Cys	Gly	Asn	Leu	Thr	Ala	Ala	Val	Gly	Ala	Phe	Ala	
			100					105					110			
Ile	Glu	Gln	Gly	Leu	Val	Asp	Lys	Ser	Lys	Ile	Pro	Ser	Asp	Gly	Pro	
		115					120					125				
Cys	Thr	Val	Lys	Ile	Trp	Gln	Lys	Asn	Ile	Gly	Lys	Thr	Ile	Ile	Ala	
	130					135					140					
His	Val	Pro	Met	Gln	Asn	Gly	Ala	Val	Leu	Glu	Thr	Gly	Asp	Phe	Glu	
	145				150					155					160	
Leu	Asp	Gly	Val	Thr	Phe	Pro	Ala	Ala	Glu	Val	Gln	Ile	Glu	Phe	Leu	
				165					170					175		
Asp	Pro	Ala	Asp	Gly	Glu	Gly	Ser	Met	Phe	Pro	Thr	Gly	Asn	Leu	Val	
		180						185					190			
Asp	Glu	Ile	Asp	Val	Pro	Asn	Ile	Gly	Arg	Leu	Lys	Ala	Thr	Leu	Ile	
		195					200					205				
Asn	Ala	Gly	Ile	Pro	Thr	Val	Phe	Leu	Asn	Ala	Ala	Asp	Leu	Gly	Tyr	
	210					215					220					
Thr	Gly	Lys	Glu	Leu	Gln	Asp	Asp	Ile	Asn	Asn	Asp	Ala	Ala	Ala	Leu	
	225				230					235					240	
Glu	Lys	Phe	Glu	Lys	Ile	Arg	Ala	Tyr	Gly	Ala	Leu	Lys	Met	Gly	Leu	
				245					250					255		
Ile	Ser	Asp	Val	Ser	Glu	Ala	Ala	Ala	Arg	Ala	His	Thr	Pro	Lys	Val	
			260					265					270			
Ala	Phe	Val	Ala	Pro	Ala	Ala	Asp	Tyr	Thr	Ala	Ser	Ser	Gly	Lys	Thr	
		275					280					285				
Val	Asn	Ala	Ala	Asp	Ile	Asp	Leu	Leu	Val	Arg	Ala	Leu	Ser	Met	Gly	
	290					295					300					

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Lys Leu His His Ala Met Gly Thr Ala Ser Val Ala Ile Thr
305 315 320

Ala Ala Ala Val Pro Gly Thr Leu Val Asn Leu Ala Ala Gly Ala Gly
325 330 335

Thr Arg Lys Glu Val Arg Phe Gly His Pro Ser Gly Thr Leu Arg Val
340 345 350

Gly Ala Ala Ala Glu Cys Gln Asp Gly Gln Trp Thr Ala Thr Lys Ala
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Val Met Ser Arg Ser Ala Arg Val Met Met Glu Gly Trp Val Arg Val
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Pro Glu Asp Cys Phe
385

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<210> 45
<211> 954
<212> DNA
<213> Neisseria meningitidis
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Met	Arg	Thr	Pro	Phe	Cys	Trp	Ala	Tyr	Ala	Asn	Ala	Ala	Arg	Ile	Ser	
1				5				10				15				
gca	atg	ctg	ccg	gcg	tgt	tgg	gcg	cag	gcg	atg	ttg	gcc	gaa	gta	atc	96
Ala	Met	Leu	Pro	Ala	Cys	Trp	Ala	Gln	Ala	Met	Leu	Ala	Glu	Val	Ile	
				20				25				30				
agc	tgc	aac	aag	gct	tcg	tcg	ctg	ccg	cag	cct	tcg	gcg	aga	tcg	gcg	144
Ser	Cys	Asn	Lys	Ala	Ser	Ser	Leu	Pro	Gln	Pro	Ser	Ala	Arg	Ser	Ala	
35				40				45								
ttt	aaa	tca	acc	tgc	ttc	atg	ggt	gat	tct	ccg	tat	ttg	gtt	cag	ata	192
Phe	Lys	Ser	Thr	Cys	Phe	Met	Gly	Asp	Ser	Pro	Tyr	Leu	Val	Gln	Ile	
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gac	ttg	gtt	ttt	gcg	ccg	cag	ggc	ggt	ggc	ttc	ttt	caa	gcc	gat	tat	240
Asp	Leu	Val	Phe	Ala	Pro	Gln	Gly	Gly	Gly	Phe	Phe	Gln	Ala	Asp	Tyr	
65				70				75				80				
ttt	gaa	ttt	gac	ttt	gct	gcc	gaa	gcg	cac	ctg	tgc	cag	cct	gcc	caa	288
Phe	Glu	Phe	Asp	Phe	Ala	Ala	Glu	Ala	His	Leu	Cys	Gln	Pro	Ala	Gln	
				85				90				95				
atc	ggc	ggc	ggc	aac	ggg	agc	gat	ttt	cgg	ata	acc	gcc	ggg	ggg	ttg	336
Ile	Gly	Gly	Gly	Asn	Gly	Ser	Asp	Phe	Arg	Ile	Thr	Ala	Gly	Gly	Leu	
100				105				110								
cgc	atc	ggc	cag	cag	gat	aat	cgg	ttt	gcc	gcc	ggg	cgg	cac	ctg	cac	384
Arg	Ile	Gly	Gln	Gln	Asp	Asn	Arg	Phe	Ala	Ala	Gly	Arg	His	Leu	His	
115				120				125								
ggt	tcc	tgc	ctg	aac	agc	gtg	gga	cag	cat	ttc	caa	agg	ttg	cga	cag	432
Gly	Ser	Cys	Leu	Asn	Ser	Val	Gly	Gln	His	Phe	Gln	Arg	Leu	Arg	Gln	
130				135				140								

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ggt cag cgg ctg .tcc	gaa gcg gta gcc cat gcg gtt gtc gct	480
Gly Gln Arg Leu Ser	Glu Ala Val Ala His Ala Val Ala Ile Ala	
145	155	160
ttg cag cgt cca cgt ttc ccg ttc cag att cag acg ccc ttt ttc act	528	
Leu Gln Arg Pro Arg Phe Pro Phe Gln Ile Gln Thr Pro Phe Phe Thr		
165	170	175
gaa agc ggc ata ttc cga cga agg aac aag gtg gat ggt atc ggt aaa	576	
Glu Ser Gly Ile Phe Arg Arg Arg Asn Lys Val Asp Gly Ile Gly Lys		
180	185	190
cgg tat cgg ggc aat gcc gac ttt gga caa ttc ctg cgc acc ttt gcc	624	
Arg Tyr Arg Gly Asn Ala Asp Phe Gly Gln Phe Leu Arg Thr Phe Ala		
195	200	205
gat ggg gag ata atc gcc ttt ttg cag cat tct gcc ctg atg gcc gcc	672	
Asp Gly Glu Ile Ile Ala Phe Leu Gln His Ser Ala Leu Met Ala Ala		
210	215	220
gaa acc ggc ttt cag gtc ggt gct tct cga acc cat cac ttc cgg cac	720	
Glu Thr Gly Phe Gln Val Gly Ala Ser Arg Thr His His Phe Arg His		
225	230	235
atc aaa tcc gcc cgc cac gca cac ata gcc gta cat gcc ctg cac ggc	768	
Ile Lys Ser Ala Arg His Ala His Ile Ala Val His Ala Leu His Gly		
245	250	255
acg cac cat ttt caa ggt ctg ccc ttt gcg ggc ggt ata acg cca ata	816	
Thr His His Phe Gln Gly Leu Pro Phe Ala Gly Gly Ile Thr Pro Ile		
260	265	270
cga ata gac cgg ttc gcc gtc caa ttc cgc ctg ata cac ggc acc ggt	864	
Arg Ile Asp Arg Phe Ala Val Gln Phe Arg Leu Ile His Gly Thr Gly		
275	280	285
gag aca aaa cgg cgt atc ccg ttc aaa cac cag cat tat ccc gcc caa	912	
Glu Thr Lys Arg Arg Ile Pro Phe Lys His Gln His Tyr Pro Ala Gln		
290	295	300
agc gat ttc gat tgc ggc cgt gcc ttc gtc gtt gcc caa taa	954	
Ser Asp Phe Asp Cys Gly Arg Ala Phe Val Val Ala Gln		
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 <211> 317
 <212> PRT
 <213> Neisseria meningitidis

<400> 46
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 35 40 45
 Phe Lys Ser Thr Cys Phe Met Gly Asp Ser Pro Tyr Leu Val Gln Ile
 50 55 60
 Asp Leu Val Phe Ala Pro Gln Gly Gly Gly Phe Phe Gln Ala Asp Tyr
 65 70 75 80

Phe Glu Phe Asp .Phe 85 Ala Glu Ala His Leu Cys Gln P 90 la Gln
 Ile Gly Gly Gly Asn Gly Ser Asp Phe Arg Ile Thr Ala Gly Gly Leu
 100 105 110
 Arg Ile Gly Gln Gln Asp Asn Arg Phe Ala Ala Gly Arg His Leu His
 115 120 125
 Gly Ser Cys Leu Asn Ser Val Gly Gln His Phe Gln Arg Leu Arg Gln
 130 135 140
 Gly Gln Arg Leu Ser Val Glu Ala Val Ala His Ala Val Ala Ile Ala
 145 150 155 160
 Leu Gln Arg Pro Arg Phe Pro Phe Gln Ile Gln Thr Pro Phe Phe Thr
 165 170 175
 Glu Ser Gly Ile Phe Arg Arg Arg Asn Lys Val Asp Gly Ile Gly Lys
 180 185 190
 Arg Tyr Arg Gly Asn Ala Asp Phe Gly Gln Phe Leu Arg Thr Phe Ala
 195 200 205
 Asp Gly Glu Ile Ile Ala Phe Leu Gln His Ser Ala Leu Met Ala Ala
 210 215 220
 Glu Thr Gly Phe Gln Val Gly Ala Ser Arg Thr His His Phe Arg His
 225 230 235 240
 Ile Lys Ser Ala Arg His Ala His Ile Ala Val His Ala Leu His Gly
 245 250 255
 Thr His His Phe Gln Gly Leu Pro Phe Ala Gly Gly Ile Thr Pro Ile
 260 265 270
 Arg Ile Asp Arg Phe Ala Val Gln Phe Arg Leu Ile His Gly Thr Gly
 275 280 285
 Glu Thr Lys Arg Arg Ile Pro Phe Lys His Gln His Tyr Pro Ala Gln
 290 295 300
 Ser Asp Phe Asp Cys Gly Arg Ala Phe Val Val Ala Gln
 305 310 315

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 <212> DNA
 <213> Neisseria meningitidis

<220>
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 ctg aat gcg cct tcc gaa ctg ggc aaa cag caa aag ttg tgg gcg ttt 96
 Leu Asn Ala Pro Ser Glu Leu Gly Lys Gln Gln Lys Leu Trp Ala Phe
 20 25 30

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gcc gct gcg ctc ggg cag cac gac agg att gag gaa gtg gtg gtc ggc	144
Ala Ala Ala Leu Gly His Asp Arg Ile Glu Glu Val Val Val Gly	
35 40 45	
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Met Asn Asn Leu Thr Val Phe Thr Arg Phe Asp Thr Asp Leu Ala Thr	
50 55 60	
ctt gcc gat gaa ttg caa tat gtg tgg gaa cac acc gcc gtt aca gac	240
Leu Ala Asp Glu Leu Gln Tyr Val Trp Glu His Thr Ala Val Thr Asp	
65 70 75 80	
cat cag ggc aaa ctg gtg gaa att ccc gtc tgc tac ggc ggc gaa tac	288
His Gln Gly Lys Leu Val Glu Ile Pro Val Cys Tyr Gly Gly Glu Tyr	
85 90 95	
ggc ccg gat ttg gcg gaa gtc gct gct ttc cat cag acg gtt att tcc	336
Gly Pro Asp Leu Ala Glu Val Ala Ala Phe His Gln Thr Val Ile Ser	
100 105 110	
gaa atc gtc cgc cgc cat acg gcg caa act tat acc gta ttt atg atg	384
Glu Ile Val Arg Arg His Thr Ala Gln Thr Tyr Thr Val Phe Met Met	
115 120 125	
ggc ttc cag cct ggt ttc cct tat ctg ggc ggc ttg ccc gaa gca ttg	432
Gly Phe Gln Pro Gly Phe Pro Tyr Leu Gly Gly Leu Pro Glu Ala Leu	
130 135 140	
cac acg ccc cgc cgt gcc gtg ccg aga acg tcc gtt cct gcc ggt tcg	480
His Thr Pro Arg Arg Ala Val Pro Arg Thr Ser Val Pro Ala Gly Ser	
145 150 155 160	
gtc ggt atc ggc ggc agt cag acc ggt gtg tat ccg ttc gct tcg ccc	528
Val Gly Ile Gly Gly Ser Gln Thr Gly Val Tyr Pro Phe Ala Ser Pro	
165 170 175	
ggc ggc tgg cag att atc ggc aga acc gaa tta ccc ttg ttc cga gcc	576
Gly Gly Trp Gln Ile Ile Gly Arg Thr Glu Leu Pro Leu Phe Arg Ala	
180 185 190	
gat ttg aat ccg ccg acc ctg ctg gcg gcg ggt gac caa gtc cgc ttt	624
Asp Leu Asn Pro Pro Thr Leu Leu Ala Ala Gly Asp Gln Val Arg Phe	
195 200 205	
gtt gca gaa agg att gag cca tga	648
Val Ala Glu Arg Ile Glu Pro	
210 215	

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 35 40 45
 Met Asn Asn Leu Thr Val Phe Thr Arg Phe Asp Thr Asp Leu Ala Thr
 50 55 60

Leu Ala Asp Glu Leu Tyr Val Trp Glu His Thr Ala Val Asp
 65 75 80
 His Gln Gly Lys Leu Val Glu Ile Pro Val Cys Tyr Gly Gly Glu Tyr
 85 90 95
 Gly Pro Asp Leu Ala Glu Val Ala Ala Phe His Gln Thr Val Ile Ser
 100 105 110
 Glu Ile Val Arg Arg His Thr Ala Gln Thr Tyr Thr Val Phe Met Met
 115 120 125
 Gly Phe Gln Pro Gly Phe Pro Tyr Leu Gly Gly Leu Pro Glu Ala Leu
 130 135 140
 His Thr Pro Arg Arg Ala Val Pro Arg Thr Ser Val Pro Ala Gly Ser
 145 150 155 160
 Val Gly Ile Gly Gly Ser Gln Thr Gly Val Tyr Pro Phe Ala Ser Pro
 165 170 175
 Gly Gly Trp Gln Ile Ile Gly Arg Thr Glu Leu Pro Leu Phe Arg Ala
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 Asp Leu Asn Pro Pro Thr Leu Leu Ala Ala Gly Asp Gln Val Arg Phe
 195 200 205
 Val Ala Glu Arg Ile Glu Pro
 210 215

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 <211> 930
 <212> DNA
 <213> Neisseria meningitidis

•<220>
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 <222> (1)..(927)

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 Gly Arg Tyr Gly His Arg Arg Tyr Gly Ile Gly His Ala Gly Ala Met
 20 25 30
 gac acg gtt gct ttg gcg gcg ggt aat att tta ttg ggc aac gac gaa 144
 Asp Thr Val Ala Leu Ala Ala Gly Asn Ile Leu Leu Gly Asn Asp Glu
 35 40 45
 ggc acg gcc gca atc gaa atc gct ttg ggc ggg ata atg ctg gtg ttt 192
 Gly Thr Ala Ala Ile Glu Ile Ala Leu Gly Gly Ile Met Leu Val Phe
 50 55 60
 gaa cgg gat acg ccg ttt tgt ctc acc ggt gcc gtg tat cag gcg gaa 240
 Glu Arg Asp Thr Pro Phe Cys Leu Thr Gly Ala Val Tyr Gln Ala Glu
 65 70 75 80
 ttg gac ggc gaa ccg gtc tat tcg tat tgg cgt tat acc gcc cgc aaa 288
 Leu Asp Gly Glu Pro Val Tyr Ser Tyr Trp Arg Tyr Thr Ala Arg Lys
 85 90 95

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0983043 051604

ggg cag acc ttg aaa ggtg cgt gcc gtg cag ggc atg tat c tat	336
Gly Gln Thr Leu Lys Met Val Arg Ala Val Gln Gly Met Tyr Gly Tyr	
100 105 110	
gtg tgc gtg gcg ggc gga ttt gat gtg ccg gaa gtg atg ggt tgc aga	384
Val Cys Val Ala Gly Gly Phe Asp Val Pro Glu Val Met Gly Ser Arg	
115 120 125	
agc acc gac ctg aaa gcc ggt ttc ggc ggc cat cag ggc aga atg ctg	432
Ser Thr Asp Leu Lys Ala Gly Phe Gly Gly His Gln Gly Arg Met Leu	
130 135 140	
caa aaa ggc gat tat ctg ccc atc ggc aaa ggt gcg cag gaa ttg tcc	480
Gln Lys Gly Asp Tyr Leu Pro Ile Gly Lys Gly Ala Gln Glu Leu Ser	
145 150 155 160	
aaa gtc ggc att gcc ccg ata ccg ttt acc gat acc atc cac ctt gtt	528
Lys Val Gly Ile Ala Pro Ile Pro Phe Thr Asp Thr Ile His Leu Val	
165 170 175	
cct tgc tgc gaa tat gcc gct ttc agt gaa aaa ggc cgt ctg aat ctg	576
Pro Ser Ser Glu Tyr Ala Ala Phe Ser Glu Lys Gly Arg Leu Asn Leu	
180 185 190	
gaa cgg gaa acg tgg acg ctg caa agc gat agc aac cgc atg ggc tac	624
Glu Arg Glu Thr Trp Thr Leu Gln Ser Asp Ser Asn Arg Met Gly Tyr	
195 200 205	
cgc ttc gac gga cag ccg ctg acc ctg tgc caa cct ttg gaa atg ctg	672
Arg Phe Asp Gly Gln Pro Leu Thr Leu Ser Gln Pro Leu Glu Met Leu	
210 215 220	
tcc cac gct gtt cag gca gga acc gtg cag gtg ccg ccc ggc ggc aaa	720
Ser His Ala Val Gln Ala Gly Thr Val Gln Val Pro Pro Gly Gly Lys	
225 230 235 240	
ccg att atc ctg ctg gcc gat gcg caa acc acc ggc ggt tat ccg aaa	768
Pro Ile Ile Leu Leu Ala Asp Ala Gln Thr Thr Gly Gly Tyr Pro Lys	
245 250 255	
atc gct acc gtt gcc gcc gcc gat ttg ggc agg ctg gca cag gtg cgc	816
Ile Ala Thr Val Ala Ala Ala Asp Leu Gly Arg Leu Ala Gln Val Arg	
260 265 270	
ttc ggc agc aaa gtc aaa ttc aaa ata atc ggc ttg aaa gaa gcc acc	864
Phe Gly Ser Lys Val Lys Phe Lys Ile Ile Gly Leu Lys Glu Ala Thr	
275 280 285	
gcc ctg cgg cgc aaa aac caa gtc tat ctg aac caa ata cgg aga atc	912
Ala Leu Arg Arg Lys Asn Gln Val Tyr Leu Asn Gln Ile Arg Arg Ile	
290 295 300	
acc cat gaa gca ggt tga	930
Thr His Glu Ala Gly	
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 <213> Neisseria meningitidis

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<221> CDS
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ttc gcc tct gga ttc tgc gcc ctg att tac cag gtc agc tgg cag agg	96
Phe Ala Ser Gly Phe Cys Ala Leu Ile Tyr Gln Val Ser Trp Gln Arg	
20 25 30	
ctt cta ttc agt cac ata ggt atc gat ttg agt tcg att act gtc att	144
Leu Leu Phe Ser His Ile Gly Ile Asp Leu Ser Ser Ile Thr Val Ile	
35 40 45	
att tct gta ttt atg gtc ggc ttg ggt gta ggt gcg tat ttc ggt gga	192
Ile Ser Val Phe Met Val Gly Leu Gly Val Gly Ala Tyr Phe Gly Gly	
50 55 60	
cgc att gct gac cgt ttt cct tca agt atc atc ccc ctg ttt tgc atc	240
Arg Ile Ala Asp Arg Phe Pro Ser Ser Ile Ile Pro Leu Phe Cys Ile	
65 70 75 80	
gct gaa gta tcc atc ggt ctg ttc ggt ttg gta agc agg ggt ctg att	288
Ala Glu Val Ser Ile Gly Leu Phe Gly Leu Val Ser Arg Gly Leu Ile	
85 90 95	
tcc ggc ttg ggg cat ctt tta gtt gag gct gat ttg ccc atc atc gct	336
Ser Gly Leu Gly His Leu Leu Val Glu Ala Asp Leu Pro Ile Ile Ala	
100 105 110	
gct gcc aat ttc ctc tta ttg ctg ctt cct acc ttt atg atg ggc gcg	384
Ala Ala Asn Phe Leu Leu Leu Leu Leu Pro Thr Phe Met Met Gly Ala	
115 120 125	
acc ttg ccc ttg ctg acc tgt ttt ttt aac cgg aaa ata cat aat gtt	432
Thr Leu Pro Leu Leu Thr Cys Phe Phe Asn Arg Lys Ile His Asn Val	
130 135 140	
ggc gag tct atc ggt acc tta tat ttt ttc aac act ttg ggt gcg gca	480
Gly Glu Ser Ile Gly Thr Leu Tyr Phe Phe Asn Thr Leu Gly Ala Ala	
145 150 155 160	
ctc gga tcg ctt gcc gcc gcc gaa ttt ttc tac gtc ttt ttt acc ctc	528
Leu Gly Ser Leu Ala Ala Ala Glu Phe Phe Tyr Val Phe Phe Thr Leu	
165 170 175	
tcc caa acc att gcg ctg aca gcc tgc ttt aac ctt ctg att gct gct	576
Ser Gln Thr Ile Ala Leu Thr Ala Cys Phe Asn Leu Leu Ile Ala Ala	
180 185 190	
tca gta tgc tgc gtt aca gaa agg atg gat ata gtg aac act aaa ccg	624
Ser Val Cys Cys Val Thr Glu Arg Met Asp Ile Val Asn Thr Lys Pro	
195 200 205	
aat act agt ttg att tat atg ctt tct ttc ctt agc ggc tta ttg agc	672
Asn Thr Ser Leu Ile Tyr Met Leu Ser Phe Leu Ser Gly Leu Leu Ser	
210 215 220	
ttg ggt ata gaa gtc ttg tgg gta agg atg ttt tcg ttc gca gca cag	720
Leu Gly Ile Glu Val Leu Trp Val Arg Met Phe Ser Phe Ala Ala Gln	
225 230 235 240	
tcc gtg cct cag gca ttt tca ttt act ctt gcc tat ttt ctg acc ggt	768
Ser Val Pro Gln Ala Phe Ser Phe Thr Leu Ala Tyr Phe Leu Thr Gly	

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255

atc Ile	gcc Ala	gtc Val	ggc Gly 260	gcg Ala	Tyr	ttt Phe	ggc Gly	aaa Lys 265	cgg Arg	att Ile	tgc Cys	cgc Arg	agt Ser 270	cgc Arg	ttt Phe	816
gtt Val	gat Asp	att Ile 275	ccc Pro	ttt Phe	atc Ile	ggg Gly	cag Gln 280	tgc Cys	ttc Phe	ttg Leu	tgg Trp	gcg Ala 285	ggt Gly	att Ile	gcc Ala	864
gac Asp	ttt Phe 290	ttg Leu	att Ile	ttg Leu	ggg Gly	gct Ala 295	gcg Ala	tgg Trp	ttg Leu	ttg Leu	acg Thr 300	ggt Gly	ttt Phe	tcc Ser	ggc Gly	912
ttc Phe 305	gtc Val	cac His	cac His	gcc Ala	ggg Gly 310	atc Ile	ttc Phe	att Ile	acc Thr	ctg Leu 315	tct Ser	gcc Ala	gtc Val	gtc Val	aga Arg 320	960
ggg Gly	ttg Leu	att Ile	ttc Phe	ccg Pro 325	ctc Leu	gta Val	cac His	cat His	gtg Val 330	ggg Gly	acg Thr	gat Asp	ggc Gly	aac Asn 335	aaa Lys	1008
tcc Ser	gga Gly	cga Arg	cag Gln 340	gtt Val	tcc Ser	aat Asn	gtt Val	tat Tyr 345	ttc Phe	gcc Ala	aac Asn	gtt Val 350	gcc Ala	ggc Gly	agt Ser	1056
gca Ala	ttg Leu	ggg Gly 355	ccg Pro	gtc Val	ctt Leu	atc Ile	ggc Gly 360	ttt Phe	gtg Val	ata Ile	ctt Leu	gat Asp 365	ttc Phe	ttg Leu	tcc Ser	1104
acc Thr	caa Gln 370	cag Gln	att Ile	tac Tyr	ctg Leu	ctc Leu 375	atc Ile	tgt Cys	ttg Leu	att Ile	tct Ser 380	gct Ala	gct Ala	gtc Val	cct Pro	1152
ttg Leu 385	ttt Phe	tgt Cys	aca Thr	ctg Leu	ttc Phe 390	caa Gln	aaa Lys	agt Ser	ctc Leu	cga Arg 395	ctg Leu	aat Asn	gca Ala	gtg Val	tcg Ser 400	1200
gta Val	gca Ala	gtt Val	tcc Ser	cta Leu 405	atg Met	ttc Phe	ggc Gly	atc Ile	ctc Leu 410	atg Met	ttc Phe	cta Leu	ctg Leu	ccg Pro 415	gat Asp	1248
tct Ser	gtc Val	ttt Phe	caa Gln 420	aat Asn	att Ile	gct Ala	gac Asp	cgt Arg 425	ccg Pro	gat Asp	cgg Arg	ctg Leu	att Ile 430	gaa Glu	aac Asn	1296
aaa Lys	cac His	ggc Gly 435	att Ile	gtt Val	gcg Ala	gtt Val	tac Tyr 440	cat His	aga Arg	gat Asp	ggg Gly 445	gat Asp	aag Lys	gtt Val	gtt Val	1344
tat Tyr	ggg Gly 450	gcg Ala	aat Asn	gta Val	tac Tyr	gac Asp 455	ggc Gly	gca Ala	tac Tyr	aat Asn	acc Thr 460	gat Asp	gta Val	ttc Phe	aat Asn	1392
agt Ser 465	gtc Val	aac Asn	ggc Gly	atc Ile	gaa Glu 470	cgt Arg	gac Ala	tat Tyr	ctg Leu	cta Leu 475	ccc Pro	tcc Ser	ctg Leu	aag Lys	tct Ser 480	1440
ggc Gly	ata Ile	cgc Arg	cgc Arg	att Ile 485	ttc Phe	gtc Val	gtt Val	gga Gly	ttg Leu 490	agt Ser	aca Thr	ggg Gly	tcg Ser	tgg Trp 495	gcg Ala	1488
cgc Arg	gtc Val	ttg Leu	tct Ser 500	gcc Ala	att Ile	ccg Pro	gaa Glu 505	atg Met	cag Gln	tcg Ser	atg Met	atc Ile	gtt Val 510	gcg Ala	gaa Glu	1536

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Ile Asn Pro Ala Tyr Ser Leu Ile Ala Asp Glu Pro Glu Ile Ala	
515 520 525	
ccg ctt ttg cag gac aaa cgt gtt gaa att gta ttg gat gac ggt agg	1632
Pro Leu Leu Gln Asp Lys Arg Val Glu Ile Val Leu Asp Asp Gly Arg	
530 535 540	
aaa tgg ctg cgt cgc cat cct gat gaa aaa ttc gac ctg att ttg atg	1680
Lys Trp Leu Arg Arg His Pro Asp Glu Lys Phe Asp Leu Ile Leu Met	
545 550 555 560	
aat acg act tgg tac tgg cgt gcc tat tcc acc aac ctg ttg agt gcg	1728
Asn Thr Thr Trp Tyr Trp Arg Ala Tyr Ser Thr Asn Leu Leu Ser Ala	
565 570 575	
gaa ttt tta aaa cag gtg caa agc cac ctt acc ccg gat ggt att gta	1776
Glu Phe Leu Lys Gln Val Gln Ser His Leu Thr Pro Asp Gly Ile Val	
580 585 590	
atg ttt aat acc acg cac agc ccg cat gct ttt gct acc gcc gta cac	1824
Met Phe Asn Thr Thr His Ser Pro His Ala Phe Ala Thr Ala Val His	
595 600 605	
agt att ccc tat gca tac cgc tat ggg cat atg gta gtc ggc tcg gca	1872
Ser Ile Pro Tyr Ala Tyr Arg Tyr Gly His Met Val Val Gly Ser Ala	
610 615 620	
acc ccg gta gtt ttc cct aat aaa gaa ctg ctc aag caa cgt ctc tcc	1920
Thr Pro Val Val Phe Pro Asn Lys Glu Leu Leu Lys Gln Arg Leu Ser	
625 630 635 640	
cgg ttg att tgg ccg gaa agc ggc agg cac gta ttt gac agc agc acc	1968
Arg Leu Ile Trp Pro Glu Ser Gly Arg His Val Phe Asp Ser Ser Thr	
645 650 655	
gtg gat gct gca gca caa aag gtt gtc tct cgt atg ctg att cag atg	2016
Val Asp Ala Ala Ala Gln Lys Val Val Ser Arg Met Leu Ile Gln Met	
660 665 670	
acg gaa cct tcg gct ggg gcg gaa gtc att acc gac gat aat atg att	2064
Thr Glu Pro Ser Ala Gly Ala Glu Val Ile Thr Asp Asp Asn Met Ile	
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gta gaa tac aaa tac ggc aga ggg att taa	2094
Val Glu Tyr Lys Tyr Gly Arg Gly Ile	
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 <213> Neisseria meningitidis

<400> 52
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 20 25 30
 Leu Leu Phe Ser His Ile Gly Ile Asp Leu Ser Ser Ile Thr Val Ile
 35 40 45
 Ile Ser Val Phe Met Val Gly Leu Gly Val Gly Ala Tyr Phe Gly Gly
 50 55 60

Arg Ile Ala Asp Arg Phe Pro Ser Ser Ile Ile Pro Leu Phe Phe Ile
 65 75 80
 Ala Glu Val Ser Ile Gly Leu Phe Gly Leu Val Ser Arg Gly Leu Ile
 85 90 95
 Ser Gly Leu Gly His Leu Leu Val Glu Ala Asp Leu Pro Ile Ile Ala
 100 105 110
 Ala Ala Asn Phe Leu Leu Leu Leu Leu Pro Thr Phe Met Met Gly Ala
 115 120 125
 Thr Leu Pro Leu Leu Thr Cys Phe Phe Asn Arg Lys Ile His Asn Val
 130 135 140
 Gly Glu Ser Ile Gly Thr Leu Tyr Phe Phe Asn Thr Leu Gly Ala Ala
 145 150 155 160
 Leu Gly Ser Leu Ala Ala Ala Glu Phe Phe Tyr Val Phe Phe Thr Leu
 165 170 175
 Ser Gln Thr Ile Ala Leu Thr Ala Cys Phe Asn Leu Leu Ile Ala Ala
 180 185 190
 Ser Val Cys Cys Val Thr Glu Arg Met Asp Ile Val Asn Thr Lys Pro
 195 200 205
 Asn Thr Ser Leu Ile Tyr Met Leu Ser Phe Leu Ser Gly Leu Leu Ser
 210 215 220
 Leu Gly Ile Glu Val Leu Trp Val Arg Met Phe Ser Phe Ala Ala Gln
 225 230 235 240
 Ser Val Pro Gln Ala Phe Ser Phe Thr Leu Ala Tyr Phe Leu Thr Gly
 245 250 255
 Ile Ala Val Gly Ala Tyr Phe Gly Lys Arg Ile Cys Arg Ser Arg Phe
 260 265 270
 Val Asp Ile Pro Phe Ile Gly Gln Cys Phe Leu Trp Ala Gly Ile Ala
 275 280 285
 Asp Phe Leu Ile Leu Gly Ala Ala Trp Leu Leu Thr Gly Phe Ser Gly
 290 295 300
 Phe Val His His Ala Gly Ile Phe Ile Thr Leu Ser Ala Val Val Arg
 305 310 315 320
 Gly Leu Ile Phe Pro Leu Val His His Val Gly Thr Asp Gly Asn Lys
 325 330 335
 Ser Gly Arg Gln Val Ser Asn Val Tyr Phe Ala Asn Val Ala Gly Ser
 340 345 350
 Ala Leu Gly Pro Val Leu Ile Gly Phe Val Ile Leu Asp Phe Leu Ser
 355 360 365
 Thr Gln Gln Ile Tyr Leu Leu Ile Cys Leu Ile Ser Ala Ala Val Pro
 370 375 380
 Leu Phe Cys Thr Leu Phe Gln Lys Ser Leu Arg Leu Asn Ala Val Ser
 385 390 395 400
 Val Ala Val Ser Leu Met Phe Gly Ile Leu Met Phe Leu Leu Pro Asp
 405 410 415

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Ser Val Phe Gln Asn Ala Asp Arg Pro Asp Arg Leu Ile Glu Asn
 420 425 430
 Lys His Gly Ile Val Ala Val Tyr His Arg Asp Gly Asp Lys Val Val
 435 440 445
 Tyr Gly Ala Asn Val Tyr Asp Gly Ala Tyr Asn Thr Asp Val Phe Asn
 450 455 460
 Ser Val Asn Gly Ile Glu Arg Ala Tyr Leu Leu Pro Ser Leu Lys Ser
 465 470 475 480
 Gly Ile Arg Arg Ile Phe Val Val Gly Leu Ser Thr Gly Ser Trp Ala
 485 490 495
 Arg Val Leu Ser Ala Ile Pro Glu Met Gln Ser Met Ile Val Ala Glu
 500 505 510
 Ile Asn Pro Ala Tyr Arg Ser Leu Ile Ala Asp Glu Pro Gln Ile Ala
 515 520 525
 Pro Leu Leu Gln Asp Lys Arg Val Glu Ile Val Leu Asp Asp Gly Arg
 530 535 540
 Lys Trp Leu Arg Arg His Pro Asp Glu Lys Phe Asp Leu Ile Leu Met
 545 550 555 560
 Asn Thr Thr Trp Tyr Trp Arg Ala Tyr Ser Thr Asn Leu Leu Ser Ala
 565 570 575
 Glu Phe Leu Lys Gln Val Gln Ser His Leu Thr Pro Asp Gly Ile Val
 580 585 590
 Met Phe Asn Thr Thr His Ser Pro His Ala Phe Ala Thr Ala Val His
 595 600 605
 Ser Ile Pro Tyr Ala Tyr Arg Tyr Gly His Met Val Val Gly Ser Ala
 610 615 620
 Thr Pro Val Val Phe Pro Asn Lys Glu Leu Leu Lys Gln Arg Leu Ser
 625 630 635 640
 Arg Leu Ile Trp Pro Glu Ser Gly Arg His Val Phe Asp Ser Ser Thr
 645 650 655
 Val Asp Ala Ala Ala Gln Lys Val Val Ser Arg Met Leu Ile Gln Met
 660 665 670
 Thr Glu Pro Ser Ala Gly Ala Glu Val Ile Thr Asp Asp Asn Met Ile
 675 680 685
 Val Glu Tyr Lys Tyr Gly Arg Gly Ile
 690 695

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 <213> Neisseria meningitidis

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09030433 084604

0330433-0340

Gly	Thr	Gly	Ile	Gly	Ser	Asn	Ser	Arg	Ala	Thr	Thr	Ala	Lys	Ser	Ala	20		25		30	
Ala	Val	Ser	Tyr	Ala	Gly	Ile	Lys	Asn	Glu	Met	Cys	Lys	Asp	Arg	Ser	35		40		45	
Met	Leu	Cys	Ala	Gly	Arg	Asp	Asp	Val	Ala	Val	Thr	Asp	Arg	Asp	Ala	50		55		60	
Lys	Ile	Asn	Ala	Pro	Pro	Pro	Asn	Leu	His	Thr	Gly	Asp	Phe	Thr	Asn	65		70		75	80
Pro	Asn	Asp	Ala	Tyr	Lys	Asn	Leu	Ile	Asn	Leu	Lys	Pro	Ala	Ile	Glu	85		90		95	
Ala	Gly	Tyr	Thr	Gly	Arg	Gly	Val	Glu	Val	Gly	Ile	Val	Asp	Thr	Gly	100		105		110	
Glu	Ser	Val	Gly	Ser	Ile	Ser	Phe	Pro	Glu	Leu	Tyr	Gly	Arg	Lys	Glu	115		120		125	
His	Gly	Tyr	Asn	Glu	Asn	Tyr	Lys	Asn	Tyr	Thr	Ala	Tyr	Met	Arg	Lys	130		135		140	
Glu	Ala	Pro	Glu	Asp	Gly	Gly	Lys	Asp	Ile	Lys	Ala	Ser	Phe	Asp		145		150		155	160
Asp	Glu	Ala	Val	Ile	Glu	Thr	Glu	Ala	Lys	Pro	Thr	Asp	Ile	Arg	His	165		170		175	
Val	Lys	Glu	Ile	Gly	His	Ile	Asp	Val	Val	Ser	His	Ile	Ile	Gly	Gly	180		185		190	
Arg	Ser	Val	Asp	Gly	Arg	Pro	Ala	Gly	Gly	Ile	Ala	Pro	Asp	Ala	Thr	195		200		205	
Leu	His	Ile	Met	Asn	Thr	His	Asp	Gly	Thr	Lys	Asn	Glu	Ile	Met	Ser	210		215		220	
Ala	Ala	Ile	Arg	Asn	Ala	Trp	Val	Lys	Leu	Gly	Glu	Arg	Gly	Val	Arg	225		230		235	240
Ile	Val	Asn	Asn	Ser	Phe	Gly	Thr	Thr	Ser	Arg	Ala	Gly	Thr	Ala	Asp	245		250		255	
His	Phe	Gln	Ile	Ala	Asn	Ser	Glu	Glu	Gln	Tyr	Arg	Gln	Ala	Leu	Leu	260		265		270	
Ala	Tyr	Ser	Gly	Gly	Asp	Lys	Thr	Asp	Glu	Gly	Ile	Arg	Leu	Met	Gln	275		280		285	
Gln	Ser	Asp	Tyr	Gly	Asn	Leu	Ser	Tyr	His	Ile	Arg	Asn	Lys	Asn	Met	290		295		300	
Leu	Phe	Ile	Phe	Ser	Ala	Ser	Asn	Asp	Ala	Gln	Ala	Gln	Pro	Asn	Thr	305		310		315	320
Leu	Thr	Leu	Leu	Pro	Phe	Tyr	Glu	Lys	Asp	Ala	Gln	Lys	Gly	Ile	Ile	325		330		335	
Thr	Val	Ala	Gly	Val	Asp	Arg	Ser	Gly	Glu	Lys	Phe	Asn	Gly	Ser	Asn	340		345		350	
His	Cys	Gly	Ile	Thr	Ala	Met	Trp	Cys	Leu	Ser	Ala	Pro	Tyr	Glu	Ala	355		360		365	

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Ser	Val	Arg	Phe	Thr	Arg	Thr	Asn	Pro	Ile	Gln	Ile	Ala	Gly	Thr	Ser	370			5			380					
Phe	Ser	Ala	Pro	Ile	Val	Thr	Gly	Thr	Ala	Ala	Leu	Leu	Leu	Gln	Lys	385			390			395					400
Tyr	Pro	Trp	Met	Ser	Asn	Asp	Asn	Leu	Arg	Thr	Thr	Leu	Leu	Thr	Thr		405				410					415	
Ala	Gln	Asp	Ile	Gly	Ala	Val	Gly	Val	Asp	Ser	Lys	Phe	Gly	Trp	Gly		420				425			430			
Leu	Leu	Asp	Ala	Gly	Lys	Ala	Met	Asn	Gly	Pro	Ala	Ser	Phe	Pro	Phe		435				440			445			
Gly	Asp	Phe	Thr	Ala	Asp	Thr	Lys	Gly	Thr	Ser	Asp	Ile	Ala	Tyr	Ser		450				455			460			
Phe	Arg	Asn	Asp	Ile	Ser	Gly	Thr	Gly	Gly	Leu	Ile	Lys	Lys	Gly	Gly		465					475				480	
Ser	Gln	Leu	Gln	Leu	His	Gly	Asn	Asn	Thr	Tyr	Thr	Gly	Lys	Thr	Ile			485				490				495	
Ile	Glu	Gly	Gly	Ser	Leu	Val	Leu	Tyr	Gly	Asn	Asn	Lys	Ser	Asp	Met				500			505			510		
Arg	Val	Glu	Thr	Lys	Gly	Ala	Leu	Ile	Tyr	Asn	Gly	Ala	Ala	Ser	Gly					515				525			
Gly	Ser	Leu	Asn	Ser	Asp	Gly	Ile	Val	Tyr	Leu	Ala	Asp	Thr	Asp	Arg						535			540			
Ser	Gly	Ala	Asn	Glu	Thr	Val	His	Ile	Lys	Gly	Asp	Leu	Gln	Leu	Gly							555				560	
Gly	Glu	Gly	Thr	Leu	Tyr	Thr	Arg	Leu	Gly	Lys	Leu	Leu	Lys	Val	Asp								570			575	
Gly	Thr	Ala	Met	Thr	Gly	Gly	Lys	Leu	Tyr	Met	Ser	Ala	Arg	Gly	Lys									585		590	
Gly	Ala	Gly	Tyr	Leu	Asn	Arg	Thr	Gly	Gln	Arg	Val	Pro	Phe	Leu	Ser										600	605	
Ala	Ala	Lys	Ile	Gly	Arg	Asp	Tyr	Ser	Phe	Phe	Thr	Asn	Ile	Glu	Thr									615		620	
Asp	Gly	Gly	Leu	Leu	Ala	Ser	Leu	Asp	Ser	Val	Glu	Lys	Thr	Ala	Gly									630		640	
Ser	Glu	Gly	Asp	Thr	Leu	Ser	Tyr	Tyr	Val	Arg	Arg	Gly	Asn	Ala	Ala										645	655	
Arg	Thr	Ala	Ser	Ala	Ala	Ala	His	Ser	Ala	Pro	Ala	Gly	Leu	Lys	His										660	670	
Ala	Val	Glu	Gln	Gly	Gly	Ser	Asn	Leu	Glu	Asn	Leu	Met	Val	Glu	Leu										675	685	
Asp	Ala	Ser	Glu	Ser	Ser	Ala	Thr	Pro	Glu	Thr	Val	Glu	Thr	Ala	Ala										690	700	
Ala	Asp	Arg	Thr	Asp	Met	Pro	Gly	Ile	Arg	Pro	Tyr	Gly	Ala	Thr	Phe										705	720	

Arg	Ala	Ala	Ala	Ala	Val	Gln	His	Ala	Asn	Ala	Ala	Asp	Gly	Val	Arg	
				725					730							
Ile	Phe	Asn	Ser	Leu	Ala	Ala	Thr	Val	Tyr	Ala	Asp	Ser	Thr	Ala	Ala	
			740					745					750			
His	Ala	Asp	Met	Gln	Gly	Arg	Arg	Leu	Lys	Ala	Val	Ser	Asp	Gly	Leu	
		755					760					765				
Asp	His	Asn	Ala	Thr	Gly	Leu	Arg	Val	Ile	Ala	Gln	Thr	Gln	Gln	Asp	
	770					775					780					
Gly	Gly	Thr	Trp	Glu	Gln	Gly	Gly	Val	Glu	Gly	Lys	Met	Arg	Gly	Ser	
785					790					795					800	
Thr	Gln	Thr	Val	Gly	Ile	Ala	Ala	Lys	Thr	Gly	Glu	Asn	Thr	Thr	Ala	
				805					810					815		
Ala	Ala	Thr	Leu	Gly	Met	Gly	His	Ser	Thr	Trp	Ser	Glu	Asn	Ser	Ala	
			820					825					830			
Asn	Ala	Lys	Thr	Asp	Ser	Ile	Ser	Leu	Phe	Ala	Gly	Ile	Arg	His	Asp	
		835					840					845				
Ala	Gly	Asp	Ile	Gly	Tyr	Leu	Lys	Gly	Leu	Phe	Ser	Tyr	Gly	Arg	Tyr	
	850					855					860					
Lys	Asn	Ser	Ile	Ser	Arg	Ser	Thr	Gly	Ala	Asp	Glu	His	Ala	Glu	Gly	
865					870					875					880	
Ser	Val	Asn	Gly	Thr	Leu	Met	Gln	Leu	Gly	Ala	Leu	Gly	Gly	Val	Asn	
				885					890					895		
Val	Pro	Phe	Ala	Ala	Thr	Gly	Asp	Leu	Thr	Val	Glu	Gly	Gly	Leu	Arg	
			900					905								
Tyr	Asp	Leu	Leu	Lys	Gln	Asp	Ala	Phe	Ala	Glu	Lys	Gly	Ser	Ala	Leu	
		915					920					925				
Gly	Trp	Ser	Gly	Asn	Ser	Leu	Thr	Glu	Gly	Thr	Leu	Val	Gly	Leu	Ala	
	930					935					940					
Gly	Leu	Lys	Leu	Ser	Gln	Pro	Leu	Ser	Asp	Lys	Ala	Val	Leu	Phe	Ala	
945					950					955					960	
Thr	Ala	Gly	Val	Glu	Arg	Asp	Leu	Asn	Gly	Arg	Asp	Tyr	Thr	Val	Thr	
				965					970					975		
Gly	Gly	Phe	Thr	Gly	Ala	Thr	Ala	Ala	Thr	Gly	Lys	Thr	Gly	Ala	Arg	
			980					985					990			
Asn	Met	Pro	His	Thr	Arg	Leu	Val	Ala	Gly	Leu	Gly	Ala	Asp	Val	Glu	
		995					1000					1005				
Phe	Gly	Asn	Gly	Trp	Asn	Gly	Leu	Ala	Arg	Tyr	Ser	Tyr	Ala	Gly	Ser	
	1010					1015					1020					
Lys	Gln	Tyr	Gly	Asn	His	Ser	Gly	Arg	Val	Gly	Val	Gly	Tyr	Arg	Phe	
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 <213> Neisseria gonorrhoeae

<220>
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<400> 54

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1 5 10 15	
cat ttg ggt gta aag atg tat tcg cac act gtt cct gcg att gcc gag	96
His Leu Gly Val Lys Met Tyr Ser His Thr Val Pro Ala Ile Ala Glu	
20 25 30	
ttg ata gcg aat gcc tac gat gca tgt gct acg gaa gtg gaa gtt agg	144
Leu Ile Ala Asn Ala Tyr Asp Ala Cys Ala Thr Glu Val Glu Val Arg	
35 40 45	
tta ttc gat aaa ccg gag cat aaa atc gtt att aaa gat aat ggc ata	192
Leu Phe Asp Lys Pro Glu His Lys Ile Val Ile Lys Asp Asn Gly Ile	
50 55 60	
gga atg agc ttc gat gaa atc aat gat ttt tat ttg aga atc ggt cgg	240
Gly Met Ser Phe Asp Glu Ile Asn Asp Phe Tyr Leu Arg Ile Gly Arg	
65 70 75 80	
aac aga agg gaa gaa aaa caa gcc tcc ccg tgc gga aga att cca acg	288
Asn Arg Arg Glu Glu Lys Gln Ala Ser Pro Cys Gly Arg Ile Pro Thr	
85 90 95	
ggt aaa aaa ggt ctt ggt aaa ttg gca tta ttc agg ctt ggc aac aaa	336
Gly Lys Lys Gly Leu Gly Lys Leu Ala Leu Phe Arg Leu Gly Asn Lys	
100 105 110	
atc gaa atc tct act atc caa gga aac gaa cgg gtt act ttt act ttg	384
Ile Glu Ile Ser Thr Ile Gln Gly Asn Glu Arg Val Thr Phe Thr Leu	
115 120 125	
gat tat gca gag att aaa aaa agt gag cgt att tat caa ccg gag ttt	432
Asp Tyr Ala Glu Ile Lys Lys Ser Glu Arg Ile Tyr Gln Pro Glu Phe	
130 135 140	
cag aaa gag tct gtt aaa ccc aat acc gaa aac gga aca act ata act	480
Gln Lys Glu Ser Val Lys Pro Asn Thr Glu Asn Gly Thr Thr Ile Thr	
145 150 155 160	
tta acc gag ctg acg aaa aaa caa gga tac ccg tta gat aat tat gtg	528
Leu Thr Glu Leu Thr Lys Lys Gln Gly Tyr Pro Leu Asp Asn Tyr Val	
165 170 175	
ggg cat ctt tcc cgt tta ttt gat ttt ccg gct cag gat ttt aaa atc	576
Gly His Leu Ser Arg Leu Phe Asp Phe Pro Ala Gln Asp Phe Lys Ile	
180 185 190	
aaa gta agc ttg aac ggc tcg gaa cca aga atc att gac gga aac cta	624
Lys Val Ser Leu Asn Gly Ser Glu Pro Arg Ile Ile Asp Gly Asn Leu	
195 200 205	
aaa tat aat ctt gtt acc cca caa ttc gaa tgg gaa tac cag gat cta	672
Lys Tyr Asn Leu Val Thr Pro Gln Phe Glu Trp Glu Tyr Gln Asp Leu	
210 215 220	
gca acc aat att tca tcg tta tct tca aaa ttc gaa cag tat gaa tac	720

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Ala Thr Asn Ile Ser Ser Leu Ser Ser Lys Phe Glu Gln Tyr Glu Tyr	
225 . . . 230 235 240	
agc gga tta ata caa ggt aag ttc att aca acg gaa aaa cct tta aag	768
Ser Gly Leu Ile Gln Gly Lys Phe Ile Thr Thr Glu Lys Pro Leu Lys	
245 250 255	
aat aat atg aaa ggt att acc ttg ttt gcc aac ggc aga atg gta aat	816
Asn Asn Met Lys Gly Ile Thr Leu Phe Ala Asn Gly Arg Met Val Asn	
260 265 270	
atg ccc gag ttt ttc act gat agc gaa tcc agc cat ttc taa	858
Met Pro Glu Phe Phe Thr Asp Ser Glu Ser Ser His Phe	
275 280 285	

<210> 55
 <211> 285
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 55

Met Ser Glu Glu Lys Leu Lys Met Ser Phe Glu Pro Thr Val Ile Glu	
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His Leu Gly Val Lys Met Tyr Ser His Thr Val Pro Ala Ile Ala Glu	
20 25 30	
Leu Ile Ala Asn Ala Tyr Asp Ala Cys Ala Thr Glu Val Glu Val Arg	
35 40 45	
Leu Phe Asp Lys Pro Glu His Lys Ile Val Ile Lys Asp Asn Gly Ile	
50 55 60	
Gly Met Ser Phe Asp Glu Ile Asn Asp Phe Tyr Leu Arg Ile Gly Arg	
65 70 75 80	
Asn Arg Arg Glu Glu Lys Gln Ala Ser Pro Cys Gly Arg Ile Pro Thr	
85 90 95	
Gly Lys Lys Gly Leu Gly Lys Leu Ala Leu Phe Arg Leu Gly Asn Lys	
100 105 110	
Ile Glu Ile Ser Thr Ile Gln Gly Asn Glu Arg Val Thr Phe Thr Leu	
115 120 125	
Asp Tyr Ala Glu Ile Lys Lys Ser Glu Arg Ile Tyr Gln Pro Glu Phe	
130 135 140	
Gln Lys Glu Ser Val Lys Pro Asn Thr Glu Asn Gly Thr Thr Ile Thr	
145 150 155 160	
Leu Thr Glu Leu Thr Lys Lys Gln Gly Tyr Pro Leu Asp Asn Tyr Val	
165 170 175	
Gly His Leu Ser Arg Leu Phe Asp Phe Pro Ala Gln Asp Phe Lys Ile	
180 185 190	
Lys Val Ser Leu Asn Gly Ser Glu Pro Arg Ile Ile Asp Gly Asn Leu	
195 200 205	
Lys Tyr Asn Leu Val Thr Pro Gln Phe Glu Trp Glu Tyr Gln Asp Leu	
210 215 220	
Ala Thr Asn Ile Ser Ser Leu Ser Ser Lys Phe Glu Gln Tyr Glu Tyr	
225 230 235 240	

0930433 081604

Ser Gly Leu Ile Gln Gly Phe Ile Thr Thr Glu Lys Pro Ile Lys
 245 250
 Asn Asn Met Lys Gly Ile Thr Leu Phe Ala Asn Gly Arg Met Val Asn
 260 265 270
 Met Pro Glu Phe Phe Thr Asp Ser Glu Ser Ser His Phe
 275 280 285

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 <213> Neisseria gonorrhoeae

<220>
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 gcc agc gaa atc gcc tat cgc ttt gta ttc gga att gaa acc tta ccg 96
 Ala Ser Glu Ile Ala Tyr Arg Phe Val Phe Gly Ile Glu Thr Leu Pro
 20 25 30
 gct gca aaa atg gcg gaa acg ttt gcg ctg aca ttt atg att gct gcg 144
 Ala Ala Lys Met Ala Glu Thr Phe Ala Leu Thr Phe Met Ile Ala Ala
 35 40 45
 ctg tat ctg ttt gcg cgt tat aag gct tcg cgg ctg ctg att gcg gtg 192
 Leu Tyr Leu Phe Ala Arg Tyr Lys Ala Ser Arg Leu Leu Ile Ala Val
 50 55 60
 ttt ttc gcg ttc agc atg att gcc aac aat gtg cat tac gcg gtt tat 240
 Phe Phe Ala Phe Ser Met Ile Ala Asn Asn Val His Tyr Ala Val Tyr
 65 70 75 80
 caa agc tgg atg acg ggt att aac tat tgg ctg atg ctg aaa gag gtt 288
 Gln Ser Trp Met Thr Gly Ile Asn Tyr Trp Leu Met Leu Lys Glu Val
 85 90 95
 acc gaa gtc ggc agc gcg ggc gcg tcg atg ttg gat aag ttg tgg ctg 336
 Thr Glu Val Gly Ser Ala Gly Ala Ser Met Leu Asp Lys Leu Trp Leu
 100 105 110
 cct gct ttg tgg ggc gtg gcg gaa gtc atg ttg ttt tgc agc ctt gcc 384
 Pro Ala Leu Trp Gly Val Ala Glu Val Met Leu Phe Cys Ser Leu Ala
 115 120 125
 aag ttc cgc cgt aag acg cat ttt tct gcc gat ata ctg ttt gcc ttc 432
 Lys Phe Arg Arg Lys Thr His Phe Ser Ala Asp Ile Leu Phe Ala Phe
 130 135 140
 cta atg ctg atg att ttc gtg cgt tcg ttc gac acg aaa caa gag cac 480
 Leu Met Leu Met Ile Phe Val Arg Ser Phe Asp Thr Lys Gln Glu His
 145 150 155 160
 ggt att tcg ccc aaa ccg aca tac agc cgc atc aaa gcc aat tat ttc 528
 Gly Ile Ser Pro Lys Pro Thr Tyr Ser Arg Ile Lys Ala Asn Tyr Phe
 165 170 175

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00030433.001001

435						440						445						
ctg gtt ttg tac agc ccg	aag gcc gtg caa cag gct gcc	gag att gcc ttc cat cag cag ctt tca acg ttc	1392															
Leu Val Leu Tyr Ser Pro Asp	Lys Ala Val Gln Gln Ala Ala Asn Gln	Ala Phe Ala Pro Cys Glu Ile Ala Phe His Gln Gln Leu Ser Thr Phe																
450	455	460																
gct ttt gcg cct tgc gag att gcc ttc cat cag cag ctt tca acg ttc			1440															
Ala Phe Ala Pro Cys Glu Ile Ala Phe His Gln Gln Leu Ser Thr Phe																		
465 470 475 480																		
ctg att cac acg ttg ggc tac gat atg ccg gtt tca ggt tgt cgc gaa			1488															
Leu Ile His Thr Leu Gly Tyr Asp Met Pro Val Ser Gly Cys Arg Glu																		
485 490 495																		
ggc tcg gta aca ggc aac ctg att acg ggc gat gca ggc agc ttg aac			1536															
Gly Ser Val Thr Gly Asn Leu Ile Thr Gly Asp Ala Gly Ser Leu Asn																		
500 505 510																		
att cgc aac ggc aag gcg gaa tat gtt tat ccg caa taa			1575															
Ile Arg Asn Gly Lys Ala Glu Tyr Val Tyr Pro Gln																		
515 520																		
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Ala Ser Glu Ile Ala Tyr Arg Phe Val Phe Gly Ile Glu Thr Leu Pro																		
20 25 30																		
Ala Ala Lys Met Ala Glu Thr Phe Ala Leu Thr Phe Met Ile Ala Ala																		
35 40 45																		
Leu Tyr Leu Phe Ala Arg Tyr Lys Ala Ser Arg Leu Leu Ile Ala Val																		
50 55 60																		
Phe Phe Ala Phe Ser Met Ile Ala Asn Asn Val His Tyr Ala Val Tyr																		
65 70 75 80																		
Gln Ser Trp Met Thr Gly Ile Asn Tyr Trp Leu Met Leu Lys Glu Val																		
85 90 95																		
Thr Glu Val Gly Ser Ala Gly Ala Ser Met Leu Asp Lys Leu Trp Leu																		
100 105 110																		
Pro Ala Leu Trp Gly Val Ala Glu Val Met Leu Phe Cys Ser Leu Ala																		
115 120 125																		
Lys Phe Arg Arg Lys Thr His Phe Ser Ala Asp Ile Leu Phe Ala Phe																		
130 135 140																		
Leu Met Leu Met Ile Phe Val Arg Ser Phe Asp Thr Lys Gln Glu His																		
145 150 155 160																		
Gly Ile Ser Pro Lys Pro Thr Tyr Ser Arg Ile Lys Ala Asn Tyr Phe																		
165 170 175																		
Ser Phe Gly Tyr Phe Val Gly Arg Val Leu Pro Tyr Gln Leu Phe Asp																		
180 185 190																		
Leu Ser Lys Ile Pro Val Phe Lys Gln Pro Ala Pro Ser Lys Ile Gly																		

205

SECRET

<210> 58
<211> 1314

<212> DNA
<213> Neisseria gonorrhoeae

<220>
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<222> (1)..(1311)

<400> 58

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1 5 10 15	
ttg ctg acg gaa aaa gtg tcg ccc atc atc gca tta atc ttg gtg ccg	96
Leu Leu Thr Glu Lys Val Ser Pro Ile Ile Ala Leu Ile Leu Val Pro	
20 25 30	
ctg att ggg gcg ttg ctg gcg ggg ttt gat gta tcc caa tta aaa gaa	144
Leu Ile Gly Ala Leu Leu Ala Gly Phe Asp Val Ser Gln Leu Lys Glu	
35 40 45	
ttt tat tcg ggc ggc acg aaa tcg gtg acg cag att gtg att atg ttt	192
Phe Tyr Ser Gly Gly Thr Lys Ser Val Thr Gln Ile Val Ile Met Phe	
50 55 60	
atg ttt tcc att ttg ttt ttt gga atc atg aac gat gtg ggg ctg ttc	240
Met Phe Ser Ile Leu Phe Phe Gly Ile Met Asn Asp Val Gly Leu Phe	
65 70 75 80	
cgt ccg atg ata ggc ggt ttg att aag ctg act cgg ggt aat atc gtg	288
Arg Pro Met Ile Gly Gly Leu Ile Lys Leu Thr Arg Gly Asn Ile Val	
85 90 95	
gca gtg agt gtg ggg acg gtc ttg gtg tcg gtg gtg gca cag ttg gac	336
Ala Val Ser Val Gly Thr Val Leu Val Ser Val Val Ala Gln Leu Asp	
100 105 110	
ggg gcg ggc gcg acg acg ttt tta tcg gtc gtc ccc gcc ctt ttg ccg	384
Gly Ala Gly Ala Thr Thr Phe Leu Ser Val Val Pro Ala Leu Leu Pro	
115 120 125	
ctt tac aag cgt ctg cat atg aat cct tac ctg ctg ttt ttg ctg ctg	432
Leu Tyr Lys Arg Leu His Met Asn Pro Tyr Leu Leu Phe Leu Leu Leu	
130 135 140	
act tcc agc gcg ggg cta atc aac ctt ttg ccg cgg ggc ggg ccg atc	480
Thr Ser Ser Ala Gly Leu Ile Asn Leu Leu Pro Arg Gly Gly Pro Ile	
145 150 155 160	
ggg cgg gtt gca agc gtg ttg ggc gca gat gtg ggc gaa ttg tat aaa	528
Gly Arg Val Ala Ser Val Leu Gly Ala Asp Val Gly Glu Leu Tyr Lys	
165 170 175	
cct ttg ttg acg gtg caa att atc ggt gtg gtg ttt atc ctt gtg ctg	576
Pro Leu Leu Thr Val Gln Ile Ile Gly Val Val Phe Ile Leu Val Leu	
180 185 190	
tcc ctg ttt ttg ggt gtg cgt gaa aaa agg cgg att gtc cgg gag ttg	624
Ser Leu Phe Leu Gly Val Arg Glu Lys Arg Arg Ile Val Arg Glu Leu	
195 200 205	
ggc gcg ttg ccc gcc gtg gcg gat ttg ata aag ccg gcg cct ttg tcg	672
Gly Ala Leu Pro Ala Val Ala Asp Leu Ile Lys Pro Ala Pro Leu Ser	
210 215 220	
gaa gaa gaa caa aaa ttg gcg cgt ccg aaa ctg ttt tgg tgg aat gtc	720
Glu Glu Glu Gln Lys Leu Ala Arg Pro Lys Leu Phe Trp Trp Asn Val	

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103750 22400000

225	230	235	240	
ctg ctg ttt ttg gcg ggc agc ctg ctt ttt tgc ggc atc ccg	768			
Leu Leu Phe Leu Ala Ala Met Ser Leu Leu Phe Ser Gly Ile Phe Pro				
245	250	255		
ccg ggt tat gta ttt atg ctg gct gca acg gcg gcg ttg ctt ttg aat	816			
Pro Gly Tyr Val Phe Met Leu Ala Ala Thr Ala Ala Leu Leu Leu Asn				
260	265	270		
tac cgc agc ccg cag gaa cag atg gag cgg att tat gcc cac gcc ggc	864			
Tyr Arg Ser Pro Gln Glu Gln Met Glu Arg Ile Tyr Ala His Ala Gly				
275	280	285		
ggc gcg gtg atg atg gcg tcc att att ttg gcg gca ggt acg ttt ttg	912			
Gly Ala Val Met Met Ala Ser Ile Ile Leu Ala Ala Gly Thr Phe Leu				
290	295	300		
ggg att ttg aag ggc gcg ggg atg ttg gac gcg att tcc aaa gac ctt	960			
Gly Ile Leu Lys Gly Ala Gly Met Leu Asp Ala Ile Ser Lys Asp Leu				
305	310	315	320	
gtg cat atc ctg ccg gac gcg ttg ctg cct tat ctg cat att gcc atc	1008			
Val His Ile Leu Pro Asp Ala Leu Leu Pro Tyr Leu His Ile Ala Ile				
325	330	335		
ggt gtg ttg ggt att ccg ctt gag ttg gtt ttg agt acg gac gct tat	1056			
Gly Val Leu Gly Ile Pro Leu Glu Leu Val Leu Ser Thr Asp Ala Tyr				
340	345	350		
tat ttc gga ctg ttt ccg att gtg gaa cag att acc tgc cag gcg ggc	1104			
Tyr Phe Gly Leu Phe Pro Ile Val Glu Gln Ile Thr Ser Gln Ala Gly				
355	360	365		
gtt gca ccc gaa gcg gca ggc tat gcg atg ttg atc ggc agt atc gtc	1152			
Val Ala Pro Glu Ala Ala Gly Tyr Ala Met Leu Ile Gly Ser Ile Val				
370	375	380		
ggt act ttt gtt acg ccg ctt tgc ccg gct ttg tgg atg ggt ttg ggt	1200			
Gly Thr Phe Val Thr Pro Leu Ser Pro Ala Leu Trp Met Gly Leu Gly				
385	390	395	400	
ttg gcg aaa ttg tgc atg ggc aaa cac atc cgt tat tgc ttt ttc tgg	1248			
Leu Ala Lys Leu Ser Met Gly Lys His Ile Arg Tyr Ser Phe Phe Trp				
405	410	415		
gcg tgg ggt ttg tgc ctg gcg ata ttg gtc agt tgc ata gcg gca gga	1296			
Ala Trp Gly Leu Ser Leu Ala Ile Leu Val Ser Ser Ile Ala Ala Gly				
420	425	430		
atc gtg cct ctg ccg taa	1314			
Ile Val Pro Leu Pro				
435				

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<211> 437
<212> PRT
<213> Neisseria gonorrhoeae

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20 25 30

Leu	Ile	Gly	Ala	Leu	Leu	Ala	Gly	Phe	Asp	Val	Ser	Gln	Leu		Glu
		35					40					45			
Phe	Tyr	Ser	Gly	Gly	Thr	Lys	Ser	Val	Thr	Gln	Ile	Val	Ile	Met	Phe
	50					55					60				
Met	Phe	Ser	Ile	Leu	Phe	Phe	Gly	Ile	Met	Asn	Asp	Val	Gly	Leu	Phe
65					70					75					80
Arg	Pro	Met	Ile	Gly	Gly	Leu	Ile	Lys	Leu	Thr	Arg	Gly	Asn	Ile	Val
				85					90					95	
Ala	Val	Ser	Val	Gly	Thr	Val	Leu	Val	Ser	Val	Val	Ala	Gln	Leu	Asp
			100					105					110		
Gly	Ala	Gly	Ala	Thr	Thr	Phe	Leu	Ser	Val	Val	Pro	Ala	Leu	Leu	Pro
		115					120					125			
Leu	Tyr	Lys	Arg	Leu	His	Met	Asn	Pro	Tyr	Leu	Leu	Phe	Leu	Leu	Leu
	130					135					140				
Thr	Ser	Ser	Ala	Gly	Leu	Ile	Asn	Leu	Leu	Pro	Arg	Gly	Gly	Pro	Ile
145					150					155					160
Gly	Arg	Val	Ala	Ser	Val	Leu	Gly	Ala	Asp	Val	Gly	Glu	Leu	Tyr	Lys
				165					170					175	
Pro	Leu	Leu	Thr	Val	Gln	Ile	Ile	Gly	Val	Val	Phe	Ile	Leu	Val	Leu
			180					185					190		
Ser	Leu	Phe	Leu	Gly	Val	Arg	Glu	Lys	Arg	Arg	Ile	Val	Arg	Glu	Leu
		195					200					205			
Gly	Ala	Leu	Pro	Ala	Val	Ala	Asp	Leu	Ile	Lys	Pro	Ala	Pro	Leu	Ser
	210					215					220				
Glu	Glu	Glu	Gln	Lys	Leu	Ala	Arg	Pro	Lys	Leu	Phe	Trp	Trp	Asn	Val
225					230					235					240
Leu	Leu	Phe	Leu	Ala	Ala	Met	Ser	Leu	Leu	Phe	Ser	Gly	Ile	Phe	Pro
				245					250					255	
Pro	Gly	Tyr	Val	Phe	Met	Leu	Ala	Ala	Thr	Ala	Ala	Leu	Leu	Leu	Asn
			260					265					270		
Tyr	Arg	Ser	Pro	Gln	Glu	Gln	Met	Glu	Arg	Ile	Tyr	Ala	His	Ala	Gly
		275					280					285			
Gly	Ala	Val	Met	Met	Ala	Ser	Ile	Ile	Leu	Ala	Ala	Gly	Thr	Phe	Leu
	290					295					300				
Gly	Ile	Leu	Lys	Gly	Ala	Gly	Met	Leu	Asp	Ala	Ile	Ser	Lys	Asp	Leu
305					310					315					320
Val	His	Ile	Leu	Pro	Asp	Ala	Leu	Leu	Pro	Tyr	Leu	His	Ile	Ala	Ile
				325					330					335	
Gly	Val	Leu	Gly	Ile	Pro	Leu	Glu	Leu	Val	Leu	Ser	Thr	Asp	Ala	Tyr
			340					345					350		
Tyr	Phe	Gly	Leu	Phe	Pro	Ile	Val	Glu	Gln	Ile	Thr	Ser	Gln	Ala	Gly
		355					360					365			
Val	Ala	Pro	Glu	Ala	Ala	Gly	Tyr	Ala	Met	Leu	Ile	Gly	Ser	Ile	Val
						375					380				

Gly Thr Phe Val Thr Pro Leu Ser Pro Ala Leu Trp Met Gly Leu Gly
 385 395 400

Leu Ala Lys Leu Ser Met Gly Lys His Ile Arg Tyr Ser Phe Phe Trp
 405 410 415

Ala Trp Gly Leu Ser Leu Ala Ile Leu Val Ser Ser Ile Ala Ala Gly
 420 425 430

Ile Val Pro Leu Pro
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 <212> DNA
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act tat ctg tat caa aag ccc aag ctc ttt aaa gga gcg gtt cgg aat 96
 Thr Tyr Leu Tyr Gln Lys Pro Lys Leu Phe Lys Gly Ala Val Arg Asn
 20 25 30

ctc gaa gcc gca tct tgt aaa tat atc aac gag ata tac caa cga gca 144
 Leu Glu Ala Ala Ser Cys Lys Tyr Ile Asn Glu Ile Tyr Gln Arg Ala
 35 40 45

gac cca acc gca ccg ctg ttt cat ctg cgt aaa aaa ggc gca atc gtt 192
 Asp Pro Thr Ala Pro Leu Phe His Leu Arg Lys Lys Gly Ala Ile Val
 50 55 60

cct aaa gaa gaa tac gtc gaa agt ttc gac gat ttg ggc aaa act cgc 240
 Pro Lys Glu Glu Tyr Val Glu Ser Phe Asp Asp Leu Gly Lys Thr Arg
 65 70 75 80

tac cgt ttt att aaa tcc gtt atc tac gaa cat atg aag aat ggt gcg 288
 Tyr Arg Phe Ile Lys Ser Val Ile Tyr Glu His Met Lys Asn Gly Ala
 85 90 95

tcg tta gtc tat aac cat att aac aac gag ccg ttt tca gac cat atc 336
 Ser Leu Val Tyr Asn His Ile Asn Asn Glu Pro Phe Ser Asp His Ile
 100 105 110

gcc cgt caa gtc gcc cgc ttt gcc ggc gca cat act att gtt agt gga 384
 Ala Arg Gln Val Ala Arg Phe Ala Gly Ala His Thr Ile Val Ser Gly
 115 120 125

tat ctt gct ttt ggc agc gac gaa tct tat aaa aac cat tgg gat acc 432
 Tyr Leu Ala Phe Gly Ser Asp Glu Ser Tyr Lys Asn His Trp Asp Thr
 130 135 140

cgc gat gtg tat gcc atc cag ctt ttc ggc aag aaa cgt tgg caa ctt 480
 Arg Asp Val Tyr Ala Ile Gln Leu Phe Gly Lys Lys Arg Trp Gln Leu
 145 150 155 160

act gcc cct gat ttc cct atg cca ttg tat atg caa cag act aaa gat 528

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Thr	Ala	Pro	Asp	Phe	Pro	Met	Pro	Leu	Tyr	Met	Gln	Gln	Thr	Lys	Asp	
				165					170					175		
act	gat	att	tcc	att	cct	gaa	cat	atc	gat	atg	gat	att	atc	ctt	gaa	576
Thr	Asp	Ile	Ser	Ile	Pro	Glu	His	Ile	Asp	Met	Asp	Ile	Ile	Leu	Glu	
			180					185					190			
gca	ggt	gat	gtc	ctc	tac	atc	cca	cgc	ggt	tgg	tgg	cac	aga	cct	atc	624
Ala	Gly	Asp	Val	Leu	Tyr	Ile	Pro	Arg	Gly	Trp	Trp	His	Arg	Pro	Ile	
		195					200					205				
ccg	ctc	ggc	tgt	gaa	acc	ttc	cac	ttc	gct	gtc	ggt	acc	ttc	cca	cca	672
Pro	Leu	Gly	Cys	Glu	Thr	Phe	His	Phe	Ala	Val	Gly	Thr	Phe	Pro	Pro	
	210					215					220					
aac	ggc	tat	aat	tac	ctc	gag	tgg	cta	atg	aag	aaa	ttt	ccc	acc	ata	720
Asn	Gly	Tyr	Asn	Tyr	Leu	Glu	Trp	Leu	Met	Lys	Lys	Phe	Pro	Thr	Ile	
225					230					235					240	
gaa	agt	ctg	cgc	cac	agt	ttc	tca	gac	tgg	gag	caa	gat	agg	acg	cgt	768
Glu	Ser	Leu	Arg	His	Ser	Phe	Ser	Asp	Trp	Glu	Gln	Asp	Arg	Thr	Arg	
				245				250					255			
atc	aac	gat	act	gcc	gca	caa	att	gct	gcc	atg	att	gcc	gac	ccc	gtc	816
Ile	Asn	Asp	Thr	Ala	Ala	Gln	Ile	Ala	Ala	Met	Ile	Ala	Asp	Pro	Val	
			260					265					270			
aat	tat	gaa	gcc	ttc	agt	gaa	gac	ttt	ctc	ggc	aaa	gaa	cgt	acc	gat	864
Asn	Tyr	Glu	Ala	Phe	Ser	Glu	Asp	Phe	Leu	Gly	Lys	Glu	Arg	Thr	Asp	
		275					280					285				
acc	gct	ttt	cat	ctc	gaa	cag	ttc	gcg	aat	ccc	aac	gct	act	ccg	ctt	912
Thr	Ala	Phe	His	Leu	Glu	Gln	Phe	Ala	Asn	Pro	Asn	Ala	Thr	Pro	Leu	
	290					295					300					
tca	gac	gac	gtc	agg	ttg	aga	tta	aat	gcc	aat	aat	ttg	gat	acg	ttg	960
Ser	Asp	Asp	Val	Arg	Leu	Arg	Leu	Asn	Ala	Asn	Asn	Leu	Asp	Thr	Leu	
305					310				315						320	
gaa	aag	gga	tat	ttg	att	ggg	aat	ggg	atg	aag	ata	agc	gta	gat	gag	1008
Glu	Lys	Gly	Tyr	Leu	Ile	Gly	Asn	Gly	Met	Lys	Ile	Ser	Val	Asp	Glu	
				325				330					335			
ttg	ggg	aaa	aaa	gtg	tta	gaa	cac	atc	ggt	aag	aat	gaa	ccg	tta	ttg	1056
Leu	Gly	Lys	Lys	Val	Leu	Glu	His	Ile	Gly	Lys	Asn	Glu	Pro	Leu	Leu	
			340				345					350				
ttg	aaa	aat	cta	ctg	gtt	aac	ttc	aat	cag	gca	aaa	cat	gaa	gaa	gtt	1104
Leu	Lys	Asn	Leu	Leu	Val	Asn	Phe	Asn	Gln	Ala	Lys	His	Glu	Glu	Val	
		355				360					365					
agg	aag	ttg	atc	tat	cag	ttg	ata	gag	tta	gat	ttt	ctg	gaa	att	ttg	1152
Arg	Lys	Leu	Ile	Tyr	Gln	Leu	Ile	Glu	Leu	Asp	Phe	Leu	Glu	Ile	Leu	
	370					375				380						
tga																1155

<210> 61

<211> 384

<212> PRT

<213> Neisseria gonorrhoeae

<400> 61

Met	Gly	Ile	His	Leu	Asp	Phe	Gly	Ile	Ser	Pro	Lys	Thr	Phe	Arg	Gln
1				5					10					15	

Thr	Tyr	Leu	Tyr	Gln	Lys	Pro	Lys	Leu	Phe	Lys	Gly	Ala	Val	Asn	
			20					25					30		
Leu	Glu	Ala	Ala	Ser	Cys	Lys	Tyr	Ile	Asn	Glu	Ile	Tyr	Gln	Arg	Ala
		35					40					45			
Asp	Pro	Thr	Ala	Pro	Leu	Phe	His	Leu	Arg	Lys	Lys	Gly	Ala	Ile	Val
	50					55					60				
Pro	Lys	Glu	Glu	Tyr	Val	Glu	Ser	Phe	Asp	Asp	Leu	Gly	Lys	Thr	Arg
	65				70				75						80
Tyr	Arg	Phe	Ile	Lys	Ser	Val	Ile	Tyr	Glu	His	Met	Lys	Asn	Gly	Ala
				85					90					95	
Ser	Leu	Val	Tyr	Asn	His	Ile	Asn	Asn	Glu	Pro	Phe	Ser	Asp	His	Ile
			100					105					110		
Ala	Arg	Gln	Val	Ala	Arg	Phe	Ala	Gly	Ala	His	Thr	Ile	Val	Ser	Gly
		115					120					125			
Tyr	Leu	Ala	Phe	Gly	Ser	Asp	Glu	Ser	Tyr	Lys	Asn	His	Trp	Asp	Thr
	130					135					140				
Arg	Asp	Val	Tyr	Ala	Ile	Gln	Leu	Phe	Gly	Lys	Lys	Arg	Trp	Gln	Leu
	145				150					155					160
Thr	Ala	Pro	Asp	Phe	Pro	Met	Pro	Leu	Tyr	Met	Gln	Gln	Thr	Lys	Asp
				165					170					175	
Thr	Asp	Ile	Ser	Ile	Pro	Glu	His	Ile	Asp	Met	Asp	Ile	Ile	Leu	Glu
			180					185					190		
Ala	Gly	Asp	Val	Leu	Tyr	Ile	Pro	Arg	Gly	Trp	Trp	His	Arg	Pro	Ile
		195					200					205			
Pro	Leu	Gly	Cys	Glu	Thr	Phe	His	Phe	Ala	Val	Gly	Thr	Phe	Pro	Pro
	210					215					220				
Asn	Gly	Tyr	Asn	Tyr	Leu	Glu	Trp	Leu	Met	Lys	Lys	Phe	Pro	Thr	Ile
	225				230					235					240
Glu	Ser	Leu	Arg	His	Ser	Phe	Ser	Asp	Trp	Glu	Gln	Asp	Arg	Thr	Arg
				245					250					255	
Ile	Asn	Asp	Thr	Ala	Ala	Gln	Ile	Ala	Ala	Met	Ile	Ala	Asp	Pro	Val
			260					265					270		
Asn	Tyr	Glu	Ala	Phe	Ser	Glu	Asp	Phe	Leu	Gly	Lys	Glu	Arg	Thr	Asp
		275					280					285			
Thr	Ala	Phe	His	Leu	Glu	Gln	Phe	Ala	Asn	Pro	Asn	Ala	Thr	Pro	Leu
	290					295					300				
Ser	Asp	Asp	Val	Arg	Leu	Arg	Leu	Asn	Ala	Asn	Asn	Leu	Asp	Thr	Leu
	305				310					315					320
Glu	Lys	Gly	Tyr	Leu	Ile	Gly	Asn	Gly	Met	Lys	Ile	Ser	Val	Asp	Glu
				325					330					335	
Leu	Gly	Lys	Lys	Val	Leu	Glu	His	Ile	Gly	Lys	Asn	Glu	Pro	Leu	Leu
			340					345					350		
Leu	Lys	Asn	Leu	Leu	Val	Asn	Phe	Asn	Gln	Ala	Lys	His	Glu	Glu	Val
		355					360					365			

09030433-081504

Arg Lys Leu Ile Tyr Gln Leu Ile Glu Leu Asp Phe Leu Glu Ile Leu
370 380

<210> 62
<211> 717
<212> DNA
<213> Neisseria meningitidis

<220>
<221> CDS
<222> (1)..(714)

<400> 62
atg aat aga ccc aag caa ccc ttc ttc cgt ccc gaa gtc gcc gtt gcc 48
Met Asn Arg Pro Lys Gln Pro Phe Phe Arg Pro Glu Val Ala Val Ala
1 5 10 15
cgc caa acc agc ctg acg ggt aaa gtg att ctg aca cga ccg ttg tca 96
Arg Gln Thr Ser Leu Thr Gly Lys Val Ile Leu Thr Arg Pro Leu Ser
20 25 30
ttt tcc cta tgg acg aca ttt gca tcg ata tct gcg tta ttg att atc 144
Phe Ser Leu Trp Thr Thr Phe Ala Ser Ile Ser Ala Leu Leu Ile Ile
35 40 45
ctg ttt ttg ata ttt ggt aac tat acg cga aag aca aca gtg gag gga 192
Leu Phe Leu Ile Phe Gly Asn Tyr Thr Arg Lys Thr Thr Val Glu Gly
50 55 60
caa att tta cct gca tcg ggc gta atc agg gtg tat gca ccg gat acg 240
Gln Ile Leu Pro Ala Ser Gly Val Ile Arg Val Tyr Ala Pro Asp Thr
65 70 75 80
ggg aca att aca gcg aaa ttc gtg gaa gat gga gaa aag gtt aag gct 288
Gly Thr Ile Thr Ala Lys Phe Val Glu Asp Gly Glu Lys Val Lys Ala
85 90 95
ggc gac aag cta ttt gcg ctt tcg acc tca cgt ttc ggc gca gga gat 336
Gly Asp Lys Leu Phe Ala Leu Ser Thr Ser Arg Phe Gly Ala Gly Asp
100 105 110
agc gtg cag cag cag ttg aaa acg gag gca gtt ttg aag aaa acg ttg 384
Ser Val Gln Gln Gln Leu Lys Thr Glu Ala Val Leu Lys Lys Thr Leu
115 120 125
gca gaa cag gaa ctg ggt cgt ctg aag ctg ata cac ggc aat gaa acg 432
Ala Glu Gln Glu Leu Gly Arg Leu Lys Leu Ile His Gly Asn Glu Thr
130 135 140
cgc agc ctt aaa gca act gtc gaa cgt ttg gaa aac cag gaa ctc cat 480
Arg Ser Leu Lys Ala Thr Val Glu Arg Leu Glu Asn Gln Glu Leu His
145 150 155 160
att tcg caa cag ata gac ggt cag aaa agg cgc att aga ctt gcg gaa 528
Ile Ser Gln Gln Ile Asp Gly Gln Lys Arg Arg Ile Arg Leu Ala Glu
165 170 175
gaa atg ttg cag aaa tat cgt ttc cta tcc gcc aat gat gca gtg cca 576
Glu Met Leu Gln Lys Tyr Arg Phe Leu Ser Ala Asn Asp Ala Val Pro
180 185 190
aaa caa gaa atg atg aat gtc aag gca gag ctt tta gag cag aaa gcc 624
Lys Gln Glu Met Met Asn Val Lys Ala Glu Leu Leu Glu Gln Lys Ala

0930433-081604

aaa ctt gat gcc tac' cgd a gaa gaa gtc ggg ctg ctt cag g atc 672
 Lys Leu Asp Ala Tyr Arg Arg Glu Glu Val Gly Leu Leu Gln Glu Ile
 210 215 220

cgc acg cag aat ctg aca ttg gcc agc ctc' ccc caa gcg gca tga 717
 Arg Thr Gln Asn Leu Thr Leu Ala Ser Leu Pro Gln Ala Ala
 225 230 235

<210> 63

<211> 238

<212> PRT

<213> Neisseria meningitidis

<400> 63

Met Asn Arg Pro Lys Gln Pro Phe Phe Arg Pro Glu Val Ala Val Ala
 1 5 10 15

Arg Gln Thr Ser Leu Thr Gly Lys Val Ile Leu Thr Arg Pro Leu Ser
 20 25 30

Phe Ser Leu Trp Thr Thr Phe Ala Ser Ile Ser Ala Leu Leu Ile Ile
 35 40 45

Leu Phe Leu Ile Phe Gly Asn Tyr Thr Arg Lys Thr Thr Val Glu Gly
 50 55 60

Gln Ile Leu Pro Ala Ser Gly Val Ile Arg Val Tyr Ala Pro Asp Thr
 65 70 75 80

Gly Thr Ile Thr Ala Lys Phe Val Glu Asp Gly Glu Lys Val Lys Ala
 85 90 95

Gly Asp Lys Leu Phe Ala Leu Ser Thr Ser Arg Phe Gly Ala Gly Asp
 100 105 110

Ser Val Gln Gln Gln Leu Lys Thr Glu Ala Val Leu Lys Lys Thr Leu
 115 120 125

Ala Glu Gln Glu Leu Gly Arg Leu Lys Leu Ile His Gly Asn Glu Thr
 130 135 140

Arg Ser Leu Lys Ala Thr Val Glu Arg Leu Glu Asn Gln Glu Leu His
 145 150 155 160

Ile Ser Gln Gln Ile Asp Gly Gln Lys Arg Arg Ile Arg Leu Ala Glu
 165 170 175

Glu Met Leu Gln Lys Tyr Arg Phe Leu Ser Ala Asn Asp Ala Val Pro
 180 185 190

Lys Gln Glu Met Met Asn Val Lys Ala Glu Leu Leu Glu Gln Lys Ala
 195 200 205

Lys Leu Asp Ala Tyr Arg Arg Glu Glu Val Gly Leu Leu Gln Glu Ile
 210 215 220

Arg Thr Gln Asn Leu Thr Leu Ala Ser Leu Pro Gln Ala Ala
 225 230 235

<210> 64

<211> 690

00030433-081601

<212> DNA
<213> Neisseria gonorrhoeae

<220>

<222> (1) .. (687)

atg Met	atg Met	aat Asn	gtc Val	gag Glu	gca Ala	gag Glu	ctt Leu	tta Leu	gag Glu	cag Gln	aaa Lys	gcc Ala	aaa Lys	ctt Leu	gat Asp	48
5				10				15								
gcc Ala	tac Tyr	ggc Gly	cga Arg	gaa Glu	gaa Glu	gcc Ala	ggg Gly	ctg Leu	ctt Leu	cag Gln	gaa Glu	atc Ile	cgc Arg	acg Thr	cag Gln	96
20				25				30								
aat Asn	ctg Leu	aca Thr	ttg Leu	gcc Ala	agc Ser	ctc Leu	ccc Pro	aaa Lys	cgg Arg	cat His	gag Glu	aca Thr	gaa Glu	caa Gln	agc Ser	144
35				40				45								
cag Gln	ctt Leu	gaa Glu	cgc Arg	acc Thr	atg Met	gcc Ala	gat Asp	att Ile	tct Ser	caa Gln	gaa Glu	gtt Val	ttg Leu	gat Asp	ttt Phe	192
50				55				60								
gaa Glu	atg Met	cgc Arg	tct Ser	gaa Glu	caa Gln	atc Ile	atc Ile	cgt Arg	gca Ala	gga Gly	cgg Arg	tcg Ser	ggt Gly	tat Tyr	ata Ile	240
65				70				75				80				
gca Ala	ata Ile	ccg Pro	aac Asn	gtc Val	gaa Glu	gtc Val	gga Gly	cgg Arg	cag Gln	gtt Val	gat Asp	cct Pro	tcc Ser	aaa Lys	ctg Leu	288
85				90				95								
ctc Leu	ttg Leu	agc Ser	att Ile	gtt Val	ccc Pro	gaa Glu	cgt Arg	acc Thr	gag Glu	tta Leu	tat Tyr	gcc Ala	cat His	cta Leu	tat Tyr	336
100				105				110								
atc Ile	ccc Pro	agc Ser	agt Ser	gca Ala	gca Ala	ggc Gly	ttt Phe	atc Ile	aag Lys	ccg Pro	aaa Lys	gac Asp	aag Lys	gtt Val	gtc Val	384
115				120				125								
cta Leu	cgt Arg	tat Tyr	cag Gln	gca Ala	tat Tyr	ccc Pro	tat Tyr	cag Gln	aaa Lys	ttc Phe	ggg Gly	ctt Leu	gct Ala	tcc Ser	ggc Gly	432
130				135				140								
agt Ser	gtc Val	gta Val	tca Ser	gtg Val	gca Ala	aaa Lys	acg Thr	gca Ala	ctg Leu	ggc Gly	aga Arg	cag Gln	gaa Glu	ttg Leu	tcg Ser	480
145				150				155				160				
gga Gly	ttg Leu	ggc Gly	atg Met	gta Val	tcc Ser	tcc Ser	gat Asp	ttg Leu	gcg Ala	aag Lys	agc Ser	aac Asn	gaa Glu	cct Pro	gtt Val	528
165				170				175								
tat Tyr	ctc Leu	gtg Val	aaa Lys	ata Ile	aaa Lys	ccc Pro	gac Asp	aaa Lys	cca Pro	acc Thr	atc Ile	act Thr	gca Ala	tac Tyr	ggt Gly	576
180				185				190								
gag Glu	gaa Glu	aaa Lys	ccg Pro	ctg Leu	caa Gln	atc Ile	ggc Gly	atg Met	acg Thr	ctg Leu	gaa Glu	gca Ala	gac Asp	atc Ile	cta Leu	624
195				200				205								
cac His	gag Glu	aaa Lys	cgg Arg	cgg Arg	ctg Leu	tac Tyr	gaa Glu	tgg Trp	gta Val	ttg Leu	gag Glu	ccg Pro	att Ile	tac Tyr	agt Ser	672
210				215				220								
atg Met	tcg Ser	ggc Gly	agg Arg	ttg Leu	taa											690

<210> 65
 <211> 229
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 65

Met Met Asn Val Glu Ala Glu Leu Leu Glu Gln Lys Ala Lys Leu Asp
 1 5 10 15
 Ala Tyr Gly Arg Glu Glu Ala Gly Leu Leu Gln Glu Ile Arg Thr Gln
 20 25 30
 Asn Leu Thr Leu Ala Ser Leu Pro Lys Arg His Glu Thr Glu Gln Ser
 35 40 45
 Gln Leu Glu Arg Thr Met Ala Asp Ile Ser Gln Glu Val Leu Asp Phe
 50 55 60
 Glu Met Arg Ser Glu Gln Ile Ile Arg Ala Gly Arg Ser Gly Tyr Ile
 65 70 75 80
 Ala Ile Pro Asn Val Glu Val Gly Arg Gln Val Asp Pro Ser Lys Leu
 85 90 95
 Leu Leu Ser Ile Val Pro Glu Arg Thr Glu Leu Tyr Ala His Leu Tyr
 100 105 110
 Ile Pro Ser Ser Ala Ala Gly Phe Ile Lys Pro Lys Asp Lys Val Val
 115 120 125
 Leu Arg Tyr Gln Ala Tyr Pro Tyr Gln Lys Phe Gly Leu Ala Ser Gly
 130 135 140
 Ser Val Val Ser Val Ala Lys Thr Ala Leu Gly Arg Gln Glu Leu Ser
 145 150 155 160
 Gly Leu Gly Met Val Ser Ser Asp Leu Ala Lys Ser Asn Glu Pro Val
 165 170 175
 Tyr Leu Val Lys Ile Lys Pro Asp Lys Pro Thr Ile Thr Ala Tyr Gly
 180 185 190
 Glu Glu Lys Pro Leu Gln Ile Gly Met Thr Leu Glu Ala Asp Ile Leu
 195 200 205
 His Glu Lys Arg Arg Leu Tyr Glu Trp Val Leu Glu Pro Ile Tyr Ser
 210 215 220
 Met Ser Gly Arg Leu
 225

<210> 66
 <211> 924
 <212> DNA
 <213> Neisseria gonorrhoeae

<220>
 <221> CDS
 <222> (1)..(921)

<400> 66

090433 081604

atg Met 1	caa Gln	tac Tyr	agc Ser	aca Thr 5'	ctg Leu	gca Ala	gga Gly	caa Gln	acc Thr 10	gac Asp	aac Asn	tcc Ser	ctc Leu	ggt Tyr	tcc Ser	48
aat Asn	aat Asn	ttc Phe	ggg Gly 20	ttt Phe	ttg Leu	cgc Arg	ctg Leu	ccg Pro 25	ctt Leu	aat Asn	ttt Phe	atg Met 30	ccg Pro	tat Tyr	gaa Glu	96
agc Ser	cat His 35	gcc Ala	gat Asp	tgg Trp	gtt Val	att Ile	acc Thr 40	ggc Gly	gtg Val	cct Pro	tat Tyr	gat Asp 45	atg Met	gcg Ala	gtt Val	144
tca Ser	ggg Gly 50	cgt Arg	tcc Ser	ggc Gly	gcg Ala	cgt Arg 55	ttc Phe	ggt Gly	cct Pro	gaa Glu	gcc Ala 60	atc Ile	cgg Arg	cgc Arg	gcc Ala	192
tcc Ser 65	gtc Val	aac Asn	ctc Leu	gct Ala	tgg Trp 70	gag Glu	cac His	cgc Arg	agg Arg	ttt Phe 75	ccg Pro	tgg Trp	aca Thr	ttt Phe	gat Asp 80	240
gtg Val	cgc Arg	gaa Glu	cgc Arg	ctg Leu 85	aac Asn	att Ile	att Ile	gat Asp	tgc Cys 90	ggc Gly	gac Asp	ttg Leu	gtt Val	ttt Phe 95	tct Ser	288
ttt Phe	ggc Gly	gac Asp	agc Ser 100	agg Arg	gat Asp	ttt Phe	gtc Val	gaa Glu 105	aaa Lys	atg Met	gaa Glu	gcg Ala	cac His 110	gcc Ala	ggc Gly	336
aaa Lys	tta Leu 115	ctt Leu	tct Ser	ttc Phe	ggc Gly	aaa Lys	cgc Arg 120	tgt Cys	ttg Leu	agt Ser	ttg Leu	ggc Gly 125	ggc Gly	gac Asp	cat His	384
ttc Phe 130	att Ile	acc Thr	ctc Leu	ccg Pro	ttg Leu	ttg Leu 135	cgc Arg	gcc Ala	cac His	gcc Ala	cgc Arg 140	tat Tyr	ttc Phe	ggc Gly	aaa Lys	432
ctc Leu 145	gca Ala	ctg Leu	att Ile	cat His	ttt Phe 150	gac Asp	gcg Ala	cac His	acc Thr	gac Asp 155	acc Thr	tac Tyr	gac Asp	aac Asn	ggc Gly 160	480
agc Ser	gaa Glu	tac Tyr	gac Asp	cac His 165	ggc Gly	acg Thr	atg Met	ttt Phe	tat Tyr 170	acc Thr	gcc Ala	ccc Pro	aag Lys	gaa Glu 175	ggc Gly	528
ctc Leu	atc Ile	gac Asp	ccg Pro 180	tcc Ser	cgt Arg	tcc Ser	gta Val	caa Gln 185	atc Ile	ggc Gly	ata Ile	cgc Arg 190	acc Thr	gaa Glu	cac His	576
agt Ser	aaa Lys 195	aaa Lys	ttg Leu	cct Pro	ttt Phe	act Thr	gtg Val 200	ttg Leu	tcc Ser	gcc Ala	ccc Pro	aaa Lys 205	gtc Val	aat Asn	gaa Glu	624
gac Asp	agt Ser 210	gtt Val	gaa Glu	gag Glu	acc Thr	gtc Val 215	cgt Arg	aaa Lys	atc Ile	aaa Lys	gaa Glu 220	acc Thr	gtc Val	ggc Gly	aat Asn	672
atg Met 225	ccc Pro	gtt Val	tac Tyr	ctg Leu	act Thr 230	ttc Phe	gac Asp	ata Ile	gac Asp	tgt Cys 235	ctc Leu	gac Asp	ccg Pro	tcg Ser	ttc Phe 240	720
gcc Ala	ccc Pro	ggg Gly	acc Thr	ggg Gly 245	acg Thr	ccc Pro	gta Val	tgc Cys	ggc Gly 250	ggc Gly	ttg Leu	agc Ser	agc Ser	gac Asp 255	agg Arg	768
gca Ala	tta Leu	aaa Lys	atc Ile	cta Leu	cgt Arg	ggg Gly	ctg Leu	acg Thr	gat Asp	ctc Leu	gac Asp	atc Ile	gtc Val	ggg Gly	atg Met	816

48

144

192

240

288

336

384

432

480

528

576

624

672

720

768

816

270

864

912

924

<213> Neisseria gonorrhoeae

Met Pro Val Tyr Leu Thr Phe Asp Ile Asp Cys Leu Asp Pro Ser Phe
225 230 235 240

[illegible]

Ala Pro Gly Thr Gly Thr Pro Val Cys Gly Gly Leu Ser Ser Asp Arg
 245 250

Ala Leu Lys Ile Leu Arg Gly Leu Thr Asp Leu Asp Ile Val Gly Met
 260 265 270

Asp Val Val Glu Val Ala Pro Ser Tyr Asp Gln Ser Asp Ile Thr Ala
 275 280 285

Leu Ala Gly Ala Thr Ile Ala Leu Glu Met Leu Tyr Leu Gln Gly Ala
 290 295 300

Lys Lys Asp
 305

<210> 68
 <211> 1404
 <212> DNA
 <213> Neisseria meningitidis

<220>
 <221> CDS
 <222> (1)..(1401)

<400> 68
 atg aca ttg ctc aat cta atg ata atg caa gat tac ggt att tcc gtt 48
 Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
 1 5 10 15

tgc ctg aca ctg acg ccc tat ttg caa cat gaa cta ttt tcg gct atg 96
 Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
 20 25 30

aaa tcc tat ttt tcc aaa tat atc cta ccc gtt tca ctt ttt acc ttg 144
 Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
 35 40 45

cca cta tcc ctt tcc cca tcc gtt tcg gct ttt acg ctg cct gaa gca 192
 Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
 50 55 60

tgg cgg gcg gcg cag caa cat tcg gct gat ttt caa gcg tcc cat tac 240
 Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65 70 75 80

cag cgt gat gca gtg cgc gca cgg caa caa caa gcc aag gcc gca ttc 288
 Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Ala Lys Ala Ala Phe
 85 90 95

ctt ccc cat gta tcc gcc aat gcc agc tac cag cgc cag ccg cca tcg 336
 Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
 100 105 110

att tct tcc acc cgc gaa aca cag gga tgg agc gtg cag gtg gga caa 384
 Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
 115 120 125

acc tta ttt gac gct gcc aaa ttt gca caa tac cgc caa agc agg ttc 432
 Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
 130 135 140

gat acg cag gct gca gaa cag cgt ttc gat gcg gca cgc gaa gaa ttg 480
 Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
 145 150 155 160

09830433.03160

ctg ttg aaa gtt gcc gaa	tat ttc aac gtt tta ctc agc	gac	528
Leu Leu Lys Val Ala Glu	Tyr Phe Asn Val Leu Leu Ser	Asp	
165	170	175	
acc gtt gcc gcc cat gcg gcg gaa aaa gag gct tat gcc cag cag gta	576		
Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val			
180	185	190	
agg cag gcg cag gct tta ttc aat aaa ggt gct gcc acc gcg ctg gat	624		
Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp			
195	200	205	
att cac gaa gcc aaa gcc ggt tac gac aat gcc ctg gcc caa gaa atc	672		
Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile			
210	215	220	
gcc gta ttg gct gag aaa caa acc tat gaa aac cag ttg aac gac tac	720		
Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr			
225	230	235	240
acc gac ctg gat agc aaa caa atc gag gcc ata gat acc gcc aac ctg	768		
Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu			
245	250	255	
ttg gca cgc tat ctg ccc aag ctg gaa cgt tac agt ctg gat gaa tgg	816		
Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp			
260	265	270	
cag cgc att gcc tta tcc aac aat cat gaa tac cgg atg cag cag ctt	864		
Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu			
275	280	285	
gcc ctg caa agc agc gga cag gcg ctt cgg gca gca cag aac agc cgc	912		
Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg			
290	295	300	
tat ccc acc gtt tct gcc cat gtc ggc tat cag aat aac ctc tac act	960		
Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr			
305	310	315	320
tca tct gcg cag aat aat gac tac cac tat cgg ggc aaa ggg atg agc	1008		
Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser			
325	330	335	
gtc ggc gta cag ttg aat ttg ccg ctt tat acc ggc gga gaa ttg tcg	1056		
Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser			
340	345	350	
ggc aaa atc cat gaa gcc gaa gcg caa tac ggg gcc gcc gaa gca cag	1104		
Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln			
355	360	365	
ctg acc gca acc gag cgg cac atc aaa ctc gcc gta cgc cag gct tat	1152		
Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr			
370	375	380	
acc gaa agc ggt gcg gcg cgt tac caa atc atg gcg caa gaa cgg gtt	1200		
Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val			
385	390	395	400
ttg gaa agc agc cgt ttg aaa ctg aaa tcg acc gaa acc ggc caa caa	1248		
Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln			
405	410	415	
tac ggc atc cgc aac cgg ctg gaa gta ata cgg gcg cgg cag gaa gtc	1296		

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
 420 425 430
 gcc caa gca gaa cag aaa ctg gct caa gca cgg tat aaa ttc atg ctg 1344
 Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
 435 440 445
 gct tat ttg cgc ttg gtg aaa gag agc ggg tta ggg ttg gaa acg gta 1392
 Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
 450 455 460
 ttt gcg gaa taa 1404
 Phe Ala Glu
 465

<210> 69
 <211> 467
 <212> PRT
 <213> Neisseria meningitidis

<400> 69
 Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
 1 5 10 15
 Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
 20 25 30
 Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
 35 40 45
 Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
 50 55 60
 Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65 70 75 80
 Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
 85 90 95
 Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
 100 105 110
 Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
 115 120 125
 Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
 130 135 140
 Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
 145 150 155 160
 Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
 165 170 175
 Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
 180 185 190
 Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
 195 200 205
 Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
 210 215 220
 Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
 225 230 235 240

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Thr Asp Leu Asp Ser Lys Ile Glu Ala Ile Asp Thr Ala Leu
 245' 250
 Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
 260 265 270
 Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
 275 280 285
 Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
 290 295 300
 Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
 305 310 315 320
 Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
 325 330 335
 Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
 340 345 350
 Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
 355 360 365
 Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
 370 375 380
 Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
 385 390 395 400
 Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
 405 410 415
 Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
 420 425 430
 Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
 435 440 445
 Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
 450 455 460
 Phe Ala Glu
 465

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 <212> DNA
 <213> Neisseria gonorrhoeae

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 <221> CDS
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<400> 70
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 Met Lys Gln Ser Ala Arg Ile Lys Asn Met Asp Gln Thr Leu Lys Asn
 1 5 10 15
 aca ttg ggc att tgc gcg ctt tta gcc ttt tgt ttt ggc gcg gcc atc 96
 Thr Leu Gly Ile Cys Ala Leu Leu Ala Phe Cys Phe Gly Ala Ala Ile
 20 25 30

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gca tca ggt tat cac ttg gaa tat gaa tac ggc tac cgt tat tct gcc	144
Ala Ser Gly Tyr His Leu Val Tyr Glu Tyr Gly Tyr Arg Tyr Ala	
35 40 45	
gtg ggc gct ttg gct tgc gtt gta ttt tta tta tta ttg gca cgc ggc	192
Val Gly Ala Leu Ala Ser Val Val Phe Leu Leu Leu Leu Ala Arg Gly	
50 55 60	
ttc ccg cgc gtt tct tca gtt gtt tta ctg att tac gtc ggc aca acc	240
Phe Pro Arg Val Ser Ser Val Val Leu Leu Ile Tyr Val Gly Thr Thr	
65 70 75 80	
gcc cta tat ttg ccg gtc ggc tgg ctg tat ggt gcg cct tct tat cag	288
Ala Leu Tyr Leu Pro Val Gly Trp Leu Tyr Gly Ala Pro Ser Tyr Gln	
85 90 95	
ata gtc ggt tgc ata ttg gaa agc aat cct gcc gag gcg cgt gaa ttt	336
Ile Val Gly Ser Ile Leu Glu Ser Asn Pro Ala Glu Ala Arg Glu Phe	
100 105 110	
gtc ggc aat ctt ccc ggg tgc ctt tat ttt gtg cag gca tta ttt ttc	384
Val Gly Asn Leu Pro Gly Ser Leu Tyr Phe Val Gln Ala Leu Phe Phe	
115 120 125	
att ttt ggc ttg aca gtt tgg aaa tat tgt gta tct gtg ggg gta ttt	432
Ile Phe Gly Leu Thr Val Trp Lys Tyr Cys Val Ser Val Gly Val Phe	
130 135 140	
gct gac gta aaa aac tat aaa cgt cgc agc aaa ata tgg ctg acc ata	480
Ala Asp Val Lys Asn Tyr Lys Arg Arg Ser Lys Ile Trp Leu Thr Ile	
145 150 155 160	
tta ttg act ttg att ttg tcc tgc gcg gtg atg gag aaa atc gcc ggc	528
Leu Leu Thr Leu Ile Leu Ser Cys Ala Val Met Glu Lys Ile Ala Gly	
165 170 175	
gat aaa gat tgg cga gaa cct gat gcc ggc ctg ttg ttg aat att ttc	576
Asp Lys Asp Trp Arg Glu Pro Asp Ala Gly Leu Leu Leu Asn Ile Phe	
180 185 190	
gac ctg tat tac gac ttg gct ttc cgc gcc ggc aca ata tgc cgc caa	624
Asp Leu Tyr Tyr Asp Leu Ala Phe Arg Ala Gly Thr Ile Cys Arg Gln	
195 200 205	
gcg cgc cca cat ttt gga agc agc aaa aaa agc gtc aac atg gca tat	672
Ala Arg Pro His Phe Gly Ser Ser Lys Lys Ser Val Asn Met Ala Tyr	
210 215 220	
ccg cca act tgc gcc caa gta taa	696
Pro Pro Thr Cys Ala Gln Val	
225 230	

<210> 71

<211> 231

<212> PRT

<213> Neisseria gonorrhoeae

<400> 71

Met Lys Gln Ser Ala Arg Ile Lys Asn Met Asp Gln Thr Leu Lys Asn
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Thr Leu Gly Ile Cys Ala Leu Leu Ala Phe Cys Phe Gly Ala Ala Ile
20 25 30

Ala Ser Gly Tyr His Leu Glu Tyr Glu Tyr Gly Tyr Arg Tyr Ser Ala

cag Gln 65	ctg Leu	att Ile	gag Glu	gga Gly	aaa Lys	cag Gln	gaa Glu	atc Ile	gac Asp	ttt Phe 75	cct Pro	tgg Trp	tat Tyr	ccg Ala 80	gcg Ala	240
cgg Arg	gtg Val	gtg Val	tgc Cys	cac His 85	gat Asp	att Ile	ctg Leu	ggg Gly	cag Gln 90	acc Thr	gcg Ala	ttg Leu	gtg Val	gat Asp 95	ttg Leu	288
gca Ala	ggt Gly	ctg Leu	cgc Arg 100	gat Asp	gcg Ala	att Ile	gcc Ala	gaa Glu 105	aaa Lys	ggc Gly	ggc Gly	gat Asp	cct Pro 110	gcc Ala	aaa Lys	336
gtg Val	aat Asn	ccg Pro 115	gtg Val	gtg Val	caa Gln	acc Thr	cag Gln 120	ctc Leu	atc Ile	gtc Val	gac Asp	cac His 125	tcg Ser	ctg Leu	gcg Ala	384
gtg Val	gaa Glu 130	tgc Cys	ggc Gly	ggc Gly	tac Tyr	gac Asp 135	ccc Pro	gat Asp	gcg Ala	ttc Phe	cgc Arg 140	aaa Lys	aac Asn	cgc Arg	gaa Glu	432
atc Ile 145	gaa Glu	gac Asp	aga Arg	cgt Arg	aac Asn 150	gaa Glu	gac Asp	cgt Arg	ttc Phe	cac His 155	ttc Phe	atc Ile	aac Asn	tgg Trp	aca Thr 160	480
aaa Lys	acc Thr	gct Ala	ttt Phe	gaa Glu 165	aat Asn	gtg Val	gac Asp	gtg Val	att Ile 170	ccg Pro	gcg Ala	ggc Gly	aac Asn	ggc Gly 175	atc Ile	528
atg Met	cac His	caa Gln 180	atc Ile	aat Asn	cta Leu	gaa Glu	aaa Lys	atg Met 185	tcg Ser	ccc Pro	gtc Val	gtc Val	caa Gln 190	gtc Val	aaa Lys	576
aac Asn	ggc Gly 195	gtg Val	gct Ala	ttc Phe	ccc Pro	gat Asp	acc Thr 200	tgc Cys	gtc Val	ggc Gly	acg Thr	gat Asp 205	tcg Ser	cac His	acg Thr	624
cca Pro 210	cac His	gtc Val	gat Asp	gcg Ala	ctg Leu	ggc Gly 215	gtg Val	att Ile	tcc Ser	gtg Val	ggc Gly 220	gtg Val	ggc Gly	gga Gly	ttg Leu	672
gaa Glu 225	gcg Ala	gaa Glu	acc Thr	gta Val	atg Met 230	ctg Leu	gga Gly	cgc Arg	gcg Ala	tcc Ser 235	atg Met	atg Met	cgc Arg	ctg Leu	ccc Pro 240	720
gat Asp	att Ile	gtc Val	ggc Gly	gtt Val 245	gag Glu	ctg Leu	aac Asn	ggc Gly	aaa Lys 250	cgg Arg	aag Lys	gcg Ala	ggc Gly	att Ile 255	acg Thr	768
gcg Ala	acg Thr	gat Asp	att Ile	gtg Val	ttg Leu	gca Ala	ctg Leu	acc Thr 265	gag Glu	ttt Phe	ctg Leu	cgc Arg	aaa Lys 270	gaa Glu	cgc Arg	816
gtg Val	gtc Val	ggg Gly 275	gcg Ala	ttt Phe	gtc Val	gaa Glu	ttc Phe	ttc Phe	ggc Gly	gag Glu	ggc Gly	gcg Ala	aga Arg	agc Ser	ctg Leu	864
tct Ser	atc Ile 290	ggc Gly	gac Asp	cgc Arg	gcg Ala	acc Thr 295	att Ile	tcc Ser	aac Asn	atg Met	acg Thr 300	ccg Pro	gag Glu	ttc Phe	ggc Gly	912
gcg Ala 305	act Thr	gcc Ala	gcg Ala	atg Met	ttc Phe 310	gct Ala	att Ile	gat Asp	gag Glu	caa Gln 315	acc Thr	att Ile	gat Asp	tat Tyr	ttg Leu 320	960
aaa Lys	ctg Leu	acc Thr	gga Gly	cgc Arg	gac Asp	gac Asp	gcg Ala	cag Gln	gtg Val	aaa Lys	ttg Leu	gtg Val	gaa Glu	acc Thr	tac Tyr	1008

325

330

335

gcc aaa acc gca ggc ttg gca gat gcc ttg aaa acc gcc tat	1056
Ala Lys Thr Ala Gly Leu Trp Ala Asp Ala Leu Lys Thr Ala Val Tyr	
340 345 350	
ccg cgc gtt ttg aaa ttt gat ttg agc agc gta acg cgc aat atg gca	1104
Pro Arg Val Leu Lys Phe Asp Leu Ser Ser Val Thr Arg Asn Met Ala	
355 360 365	
ggc ccg agc aac ccg cac gcg cgt ttt gcg acc gcc gat ttg gcc ggc	1152
Gly Pro Ser Asn Pro His Ala Arg Phe Ala Thr Ala Asp Leu Ala Gly	
370 375 380	
aaa ggc ttg gct aaa cct tac gaa gag cct tca gac gcc caa atg cct	1200
Lys Gly Leu Ala Lys Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met Pro	
385 390 395 400	
gac ggt gca gtg att att gcc gcg att act tcc tgt acc aat act tcc	1248
Asp Gly Ala Val Ile Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr Ser	
405 410 415	
aat ccg cgc aac gtt gtc gcc gcc gcg ctg ttg gca cgc aat gcc aac	1296
Asn Pro Arg Asn Val Val Ala Ala Ala Leu Leu Ala Arg Asn Ala Asn	
420 425 430	
cgc ctc ggc ttg caa cgc aaa cct tgg gtg aaa tct tcg ttt gcc ccg	1344
Arg Leu Gly Leu Gln Arg Lys Pro Trp Val Lys Ser Ser Phe Ala Pro	
435 440 445	
ggt tca aaa gta gcc gaa atc tat ttg aaa gaa gca gat ctg ctg ccc	1392
Gly Ser Lys Val Ala Glu Ile Tyr Leu Lys Glu Ala Asp Leu Leu Pro	
450 455 460	
gaa atg gaa aaa ctc ggc ttc ggt atc gtt gcc ttc gca tgt acc acc	1440
Glu Met Glu Lys Leu Gly Phe Gly Ile Val Ala Phe Ala Cys Thr Thr	
465 470 475 480	
tgt aac ggc atg agc ggc gcg ctg gat ccg aaa atc cag aaa gaa atc	1488
Cys Asn Gly Met Ser Gly Ala Leu Asp Pro Lys Ile Gln Lys Glu Ile	
485 490 495	
atc gac cgc gat ttg tac gcc acc gcc gta ttg tca ggc aac cgc aac	1536
Ile Asp Arg Asp Leu Tyr Ala Thr Ala Val Leu Ser Gly Asn Arg Asn	
500 505 510	
ttt gac ggc cgt atc cat ccg tat gcg aaa cag gct ttc ctc gct tcg	1584
Phe Asp Gly Arg Ile His Pro Tyr Ala Lys Gln Ala Phe Leu Ala Ser	
515 520 525	
cct ccg ttg gtc gtt gcc tac gcg ctg gca ggc agc atc cgt ttc gat	1632
Pro Pro Leu Val Val Ala Tyr Ala Leu Ala Gly Ser Ile Arg Phe Asp	
530 535 540	
att gaa aac gac gta ctc ggc gtt gca gac ggc aaa gaa atc cgc ctg	1680
Ile Glu Asn Asp Val Leu Gly Val Ala Asp Gly Lys Glu Ile Arg Leu	
545 550 555 560	
aaa gac att tgg cct acc gat gaa gaa atc gat gcc atc gtt gcc gaa	1728
Lys Asp Ile Trp Pro Thr Asp Glu Glu Ile Asp Ala Ile Val Ala Glu	
565 570 575	
tat gtg aaa ccg cag caa ttt cgc gac gtt tat atc ccg atg ttc gac	1776
Tyr Val Lys Pro Gln Gln Phe Arg Asp Val Tyr Ile Pro Met Phe Asp	
580 585 590	

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acc Thr	ggc Gly	aca Thr 595	gcg Ala	caa Gln	aaa Lys	gca Ala 600	cca Pro	agc Ser	ccg Pro	ctg Leu	tac Tyr	gac Asp 605	tgg Trp	cgt Leu	cca Pro	1824
atg Met	tct Ser 610	acc Thr	tat Tyr	atc Ile	cgc Arg 615	cgc Arg	cca Pro	cct Pro	tac Tyr	tgg Trp	gaa Glu 620	ggc Gly	gca Ala	ctg Leu	gca Ala	1872
ggg Gly 625	gaa Glu	cgc Arg	aca Thr	tta Leu	agc Ser 630	ggg Gly	atg Met	cgt Arg	ccg Pro	ctg Leu 635	gcg Ala	att Ile	tgt Leu	ccc Pro	gac Asp 640	1920
aac Asn	atc Ile	acc Thr	acc Thr	gac Asp 645	cat His	ctc Leu	tcg Ser	cca Pro	tcc Ser 650	aat Asn	gcg Ala	att Ile	tgt Leu	gca Ala 655	agc Ser	1968
agt Ser	gcc Ala	gca Ala	ggc Gly 660	gaa Glu	tat Tyr	ttg Leu	gca Ala	aaa Lys 665	atg Met	ggg Gly	ttg Leu	cct Pro	gaa Glu 670	gaa Glu	gac Asp	2016
ttc Phe	aac Asn	tct Ser 675	tac Tyr	gca Ala	acc Thr	cac His	cgt Arg 680	ggc Gly	gac Asp	cac His	ttg Leu	acc Thr 685	gcc Ala	caa Gln	cgc Arg	2064
gca Ala	acc Thr 690	ttc Phe	gcc Ala	aat Asn	ccg Pro	aaa Lys 695	ctg Leu	ttt Phe	aac Asn	gaa Glu	atg Met 700	gtg Val	aga Arg	aac Asn	gaa Glu	2112
gac Asp 705	ggc Gly	agc Ser	gta Val	cgc Arg	caa Gln 710	ggg Gly	tcg Ser	ctg Leu	gca Ala	cgc Arg 715	gtt Val	gaa Glu	ccc Pro	gaa Glu	ggc Gly 720	2160
caa Gln	acc Thr	atg Met	cgc Arg	atg Met 725	tgg Trp	gaa Glu	gcc Ala	atc Ile	gaa Glu 730	acc Thr	tat Tyr	atg Met	aac Asn	cgc Arg 735	aaa Lys	2208
cag Gln	ccg Pro	ctc Leu	atc Ile 740	atc Ile	att Ile	gcc Ala	ggc Gly	gcg Ala 745	gac Asp	tac Tyr	ggg Gly	caa Gln	ggc Gly 750	tca Ser	agc Ser	2256
cgc Arg	gac Asp	tgg Trp 755	gct Ala	gca Ala	aaa Lys	ggc Gly	gta Val 760	cgc Arg	ctc Leu	gcc Ala	ggc Gly	gtg Val 765	gaa Glu	gcg Ala	att Ile	2304
gtt Val	gcc Ala 770	gaa Glu	ggc Gly	ttc Phe	gag Glu	cgt Arg 775	atc Ile	cac His	cgc Arg	acc Thr	aac Asn 780	ttg Leu	atc Ile	ggg Gly	atg Met	2352
ggc Gly 785	gtg Val	ttg Leu	ccg Pro	ctg Leu	cag Gln 790	ttc Phe	aaa Lys	ccg Pro	ggg Gly	acc Thr 795	aac Asn	cgc Arg	cac His	acc Thr	ctg Leu 800	2400
caa Gln	ctg Leu	gac Asp	ggg Gly	acg Thr 805	gaa Glu	acc Thr	tac Tyr	gac Asp	gtt Val 810	gtc Val	ggc Gly	gaa Glu	cgc Arg	aca Thr 815	ccg Pro	2448
cgc Arg	tgc Cys	gac Asp	ctg Leu 820	acc Thr	ctt Leu	gtg Val	att Ile	cac His 825	cgt Arg	aaa Lys	aac Asn	ggc Gly	gag Glu 830	acc Thr	gtc Val	2496
gaa Glu	gtc Val 835	ccc Pro	att Ile	acc Thr	tgc Cys	cgc Arg	ctc Leu 840	gat Asp	acc Thr	gca Ala	gaa Glu	gaa Glu 845	gtg Val	ttg Leu	gta Val	2544
tat Tyr	gaa Glu	gcc Ala	ggg Gly	ggc Gly	gta Val	ttg Leu	caa Gln	cgg Arg	ttt Phe	gca Ala	cag Gln	gat Asp	ttt Phe	ttg Leu	gaa Glu	2592

ggg aac gcg gct tag'
Gly Asn Ala Ala
865

<210> 73

<211> 868

<212> PRT

<213> Neisseria meningitidis

<400> 73

Met Ala Ala Asn Gln Arg Tyr Arg Lys Pro Leu Pro Gly Thr Asp Leu
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Glu Tyr Tyr Asp Ala Arg Ala Ala Cys Glu Gly Ile Lys Pro Gly Ser
20 25 30

Tyr Asp Lys Leu Pro Tyr Thr Ser Arg Ile Leu Ala Glu Asn Leu Val
35 40 45

Asn Arg Ala Asp Lys Val Asp Leu Pro Thr Leu Gln Ser Trp Leu Gly
50 55 60

Gln Leu Ile Glu Gly Lys Gln Glu Ile Asp Phe Pro Trp Tyr Pro Ala
65 70 75 80

Arg Val Val Cys His Asp Ile Leu Gly Gln Thr Ala Leu Val Asp Leu
85 90 95

Ala Gly Leu Arg Asp Ala Ile Ala Glu Lys Gly Gly Asp Pro Ala Lys
100 105 110

Val Asn Pro Val Val Gln Thr Gln Leu Ile Val Asp His Ser Leu Ala
115 120 125

Val Glu Cys Gly Gly Tyr Asp Pro Asp Ala Phe Arg Lys Asn Arg Glu
130 135 140

Ile Glu Asp Arg Arg Asn Glu Asp Arg Phe His Phe Ile Asn Trp Thr
145 150 155 160

Lys Thr Ala Phe Glu Asn Val Asp Val Ile Pro Ala Gly Asn Gly Ile
165 170 175

Met His Gln Ile Asn Leu Glu Lys Met Ser Pro Val Val Gln Val Lys
180 185 190

Asn Gly Val Ala Phe Pro Asp Thr Cys Val Gly Thr Asp Ser His Thr
195 200 205

Pro His Val Asp Ala Leu Gly Val Ile Ser Val Gly Val Gly Gly Leu
210 215 220

Glu Ala Glu Thr Val Met Leu Gly Arg Ala Ser Met Met Arg Leu Pro
225 230 235 240

Asp Ile Val Gly Val Glu Leu Asn Gly Lys Arg Lys Ala Gly Ile Thr
245 250 255

Ala Thr Asp Ile Val Leu Ala Leu Thr Glu Phe Leu Arg Lys Glu Arg
260 265 270

Val Val Gly Ala Phe Val Glu Phe Phe Gly Glu Gly Ala Arg Ser Leu
275 280 285

0960433-091600

Ser	Ile	Gly	Asp	Arg	Ala	Thr	Ile	Ser	Asn	Met	Thr	Pro	Glu	Phe	Gly	290	305
Ala	Thr	Ala	Ala	Met	Phe	Ala	Ile	Asp	Glu	Gln	Thr	Ile	Asp	Tyr	Leu	305	320
Lys	Leu	Thr	Gly	Arg	Asp	Asp	Ala	Gln	Val	Lys	Leu	Val	Glu	Thr	Tyr	325	335
Ala	Lys	Thr	Ala	Gly	Leu	Trp	Ala	Asp	Ala	Leu	Lys	Thr	Ala	Val	Tyr	340	350
Pro	Arg	Val	Leu	Lys	Phe	Asp	Leu	Ser	Ser	Val	Thr	Arg	Asn	Met	Ala	355	365
Gly	Pro	Ser	Asn	Pro	His	Ala	Arg	Phe	Ala	Thr	Ala	Asp	Leu	Ala	Gly	370	380
Lys	Gly	Leu	Ala	Lys	Pro	Tyr	Glu	Glu	Pro	Ser	Asp	Gly	Gln	Met	Pro	385	400
Asp	Gly	Ala	Val	Ile	Ile	Ala	Ala	Ile	Thr	Ser	Cys	Thr	Asn	Thr	Ser	405	415
Asn	Pro	Arg	Asn	Val	Val	Ala	Ala	Ala	Leu	Leu	Ala	Arg	Asn	Ala	Asn	420	430
Arg	Leu	Gly	Leu	Gln	Arg	Lys	Pro	Trp	Val	Lys	Ser	Ser	Phe	Ala	Pro	435	445
Gly	Ser	Lys	Val	Ala	Glu	Ile	Tyr	Leu	Lys	Glu	Ala	Asp	Leu	Leu	Pro	450	460
Glu	Met	Glu	Lys	Leu	Gly	Phe	Gly	Ile	Val	Ala	Phe	Ala	Cys	Thr	Thr	465	480
Cys	Asn	Gly	Met	Ser	Gly	Ala	Leu	Asp	Pro	Lys	Ile	Gln	Lys	Glu	Ile	485	495
Ile	Asp	Arg	Asp	Leu	Tyr	Ala	Thr	Ala	Val	Leu	Ser	Gly	Asn	Arg	Asn	500	510
Phe	Asp	Gly	Arg	Ile	His	Pro	Tyr	Ala	Lys	Gln	Ala	Phe	Leu	Ala	Ser	515	525
Pro	Pro	Leu	Val	Val	Ala	Tyr	Ala	Leu	Ala	Gly	Ser	Ile	Arg	Phe	Asp	530	540
Ile	Glu	Asn	Asp	Val	Leu	Gly	Val	Ala	Asp	Gly	Lys	Glu	Ile	Arg	Leu	545	560
Lys	Asp	Ile	Trp	Pro	Thr	Asp	Glu	Glu	Ile	Asp	Ala	Ile	Val	Ala	Glu	565	575
Tyr	Val	Lys	Pro	Gln	Gln	Phe	Arg	Asp	Val	Tyr	Ile	Pro	Met	Phe	Asp	580	590
Thr	Gly	Thr	Ala	Gln	Lys	Ala	Pro	Ser	Pro	Leu	Tyr	Asp	Trp	Arg	Pro	595	605
Met	Ser	Thr	Tyr	Ile	Arg	Arg	Pro	Pro	Tyr	Trp	Glu	Gly	Ala	Leu	Ala	610	620
Gly	Glu	Arg	Thr	Leu	Ser	Gly	Met	Arg	Pro	Leu	Ala	Ile	Leu	Pro	Asp	625	640

09830433.084604

gcg gga agc gca cgc gac aaa atc ctc ttg cgc gta ctc ggc agc ccg Ala Gly Ser Ala Arg Asn Lys Ile Leu Leu Arg Val Leu Gly Pro 35 40 45	144
gat ccc tac ggc aag cag ata gac ggt ttg ggc aac gcc agc tcg tcc Asp Pro Tyr Gly Lys Gln Ile Asp Gly Leu Gly Asn Ala Ser Ser Ser 50 55 60	192
acc agc aag gcg gtg att ttg gac aag tcc gaa cgc gcc gat cac gat Thr Ser Lys Ala Val Ile Leu Asp Lys Ser Glu Arg Ala Asp His Asp 65 70 75 80	240
gtc gat tac ctt ttc ggg caa gtt tcc atc gac aaa cct ttt gtc gat Val Asp Tyr Leu Phe Gly Gln Val Ser Ile Asp Lys Pro Phe Val Asp 85 90 95	288
tgg agt ggc aac tgc ggc aac ctc acc gcc gcc gtg ggc gca ttt gcc Trp Ser Gly Asn Cys Gly Asn Leu Thr Ala Ala Val Gly Ala Phe Ala 100 105 110	336
atc gag caa ggc ttg gtc gat aaa ggc aag att cct tca gac ggc atc Ile Glu Gln Gly Leu Val Asp Lys Gly Lys Ile Pro Ser Asp Gly Ile 115 120 125	384
tgc aca gtc aaa atc tgg cag aaa aac atc ggc aaa acc att att gcc Cys Thr Val Lys Ile Trp Gln Lys Asn Ile Gly Lys Thr Ile Ile Ala 130 135 140	432
cat gta ccg atg caa aac ggc gca gtt ttg gaa aca ggc gat ttt gag His Val Pro Met Gln Asn Gly Ala Val Leu Glu Thr Gly Asp Phe Glu 145 150 155 160	480
ctc gac ggc gta acg ttc ccg gca gcc gaa gta caa atc gaa ttt ctt Leu Asp Gly Val Thr Phe Pro Ala Ala Glu Val Gln Ile Glu Phe Leu 165 170 175	528
gat cca gcc gac ggc gaa ggc agt atg ttc cca acc ggc aat ttg gtc Asp Pro Ala Asp Gly Glu Gly Ser Met Phe Pro Thr Gly Asn Leu Val 180 185 190	576
gat gaa att gat gtg ccg aat ata ggc cgt ttg aaa gcc acg ctc atc Asp Glu Ile Asp Val Pro Asn Ile Gly Arg Leu Lys Ala Thr Leu Ile 195 200 205	624
aac gcg ggc att ccg acc gtt ttc ctg aat gcc gcc gac ttg ggc tac Asn Ala Gly Ile Pro Thr Val Phe Leu Asn Ala Ala Asp Leu Gly Tyr 210 215 220	672
acg ggc aaa gag ttg caa gac gac atc aac aac gat gcc gca gct ttg Thr Gly Lys Glu Leu Gln Asp Asp Ile Asn Asn Asp Ala Ala Ala Leu 225 230 235 240	720
gaa aaa ttc gag aaa atc cgc gct tac ggt gcg ctg aaa atg ggt ctg Glu Lys Phe Glu Lys Ile Arg Ala Tyr Gly Ala Leu Lys Met Gly Leu 245 250 255	768
atc agc gac gta tcc gaa gct gcc gcc cgc gcg cac acg ccg aaa gtc Ile Ser Asp Val Ser Glu Ala Ala Arg Ala His Thr Pro Lys Val 260 265 270	816
gcc ttc gtc gcg ccc gcc gcc gat tac acc gcc tcc agt ggc aaa acc Ala Phe Val Ala Pro Ala Ala Asp Tyr Thr Ala Ser Ser Gly Lys Thr 275 280 285	864
gtg aat gcc gcc gac atc gat ttg ctg gta cgc gcc ctg agc atg ggc Val Asn Ala Ala Asp Ile Asp Leu Leu Val Arg Ala Leu Ser Met Gly 290 295 300	912

290

295

300

aaa ttg cac cac gcg atc ggt acc gcc tct gtt gcc att acc 960
Lys Leu His His Ala Met Met Gly Thr Ala Ser Val Ala Ile Ala Thr
305 310 315 320

gcc gcc gcc gtg ccc ggt acg ctg gtc aac ctt gcc gca ggc ggc gga 1008
Ala Ala Ala Val Pro Gly Thr Leu Val Asn Leu Ala Ala Gly Gly Gly
325 330 335

acg cgt aaa gaa gtg cgc ttc ggg cat cct tcc ggc aca ttg cgc gtc 1056
Thr Arg Lys Glu Val Arg Phe Gly His Pro Ser Gly Thr Leu Arg Val
340 345 350

ggt gca gcc gcc gaa tgt cag gac gga caa tgg acg gcc acc aaa gcg 1104
Gly Ala Ala Ala Glu Cys Gln Asp Gly Gln Trp Thr Ala Thr Lys Ala
355 360 365

gtt atg agc cgc agc gca cgc gtg atg atg gaa ggt tgg gtc agg gtg ·1152
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Pro Glu Asp Cys Phe
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<211> 389

<212> PRT

<213> Neisseria meningitidis

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Lys Gly Val Phe Phe Lys Arg Ser Asp Leu Pro Glu Ala Ala Arg Glu
20 25 30

Ala Gly Ser Ala Arg Asp Lys Ile Leu Leu Arg Val Leu Gly Ser Pro
35 40 45

Asp Pro Tyr Gly Lys Gln Ile Asp Gly Leu Gly Asn Ala Ser Ser Ser
 - 50 - 55 - 60 -

Thr Ser Lys Ala Val Ile Leu Asp Lys Ser Glu Arg Ala Asp His Asp
65 70 75 80

Val Asp Tyr Leu Phe Gly Gln Val Ser Ile Asp Lys Pro Phe Val Asp
85 90 95

Trp Ser Gly Asn Cys Gly Asn Leu Thr Ala Ala Val Gly Ala Phe Ala
100 105 110

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Ile Glu Gln Gly Leu Val Asp Lys Gly Lys Ile Pro Ser Asp Gly Ile
      115                      120                      125

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Cys Thr Val Lys Ile Trp Gln Lys Asn Ile Gly Lys Thr Ile Ile Ala
130 135 140

His	Val	Pro	Met	Gln	Asn	Gly	Ala	Val	Leu	Glu	Thr	Gly	Asp	Phe	Glu
145					150					155					160

Leu Asp Gly Val Thr Phe Pro Ala Ala Glu Val Gln Ile Glu Phe Leu
165 170 175

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Ile Ser Val Phe Met Val Gly Leu Gly Val Gly Ala Tyr Phe Gly	
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cgc att gct gac cgt ttt cct tca agt atc atc ccc ctg ttt tgc atc	240
Arg Ile Ala Asp Arg Phe Pro Ser Ser Ile Ile Pro Leu Phe Cys Ile	
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Ala Glu Val Ser Ile Gly Leu Phe Gly Leu Val Ser Lys Gly Leu Ile	
85 90 95	
tcc ggc ttg ggg cat ctt tta gtt gag gct gat ttg ccc atc atc gct	336
Ser Gly Leu Gly His Leu Leu Val Glu Ala Asp Leu Pro Ile Ile Ala	
100 105 110	
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Ala Ala Asn Phe Leu Leu Leu Leu Leu Pro Thr Phe Met Met Gly Ala	
115 120 125	
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Thr Leu Pro Leu Leu Thr Cys Phe Phe Asn Arg Lys Ile His Asn Val	
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Gly Glu Ser Ile Gly Thr Leu Tyr Phe Phe Asn Thr Leu Gly Ala Ala	
145 150 155 160	
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Leu Gly Ser Leu Ala Ala Ala Glu Phe Phe Tyr Val Phe Phe Thr Leu	
165 170 175	
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Ser Gln Thr Ile Ala Leu Thr Ala Cys Leu Asn Leu Leu Ile Ala Ala	
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tca gta tgc tgc gtt aca gaa agg atg gat atg gtg aac act aaa ccg	624
Ser Val Cys Cys Val Thr Glu Arg Met Asp Met Val Asn Thr Lys Pro	
195 200 205	
aat act agt gtg att aat atg ctt tct ttc ctt acc gga tta ttg agc	672
Asn Thr Ser Val Ile Asn Met Leu Ser Phe Leu Thr Gly Leu Leu Ser	
210 215 220	
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Leu Gly Ile Glu Val Leu Trp Val Arg Met Phe Ser Phe Ala Ala Gln	
225 230 235 240	
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Ser Val Pro Gln Ala Phe Ser Phe Ile Leu Ala Cys Phe Leu Thr Gly	
245 250 255	
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Ile Ala Val Gly Ala Tyr Phe Gly Lys Arg Ile Cys Arg Ser Arg Phe	
260 265 270	
gtt gat att ccc ttt atc ggg cag tgc ttc ttg tgg gcg ggt att gcc	864
Val Asp Ile Pro Phe Ile Gly Gln Cys Phe Leu Trp Ala Gly Ile Ala	
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Asp Phe Leu Ile Leu Gly Ala Ala Trp Leu Leu Thr Gly Phe Ser Gly	
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Phe Val His His Ala Gly Ile Phe Ile Thr Leu Ser Ala Val Val Arg	

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325				330				335								
tcc Ser	gga Gly	cga Arg	cag Gln	gtt Val	tcc Ser	aat Asn	gtt Val	tat Tyr	ttc Phe	gcc Ala	aac Asn	gtt Val	gcc Ala	ggc Gly	agt Ser	1056
340				345				350								
gca Ala	ttg Leu	ggt Gly	ccg Pro	gtc Val	ctt Leu	atc Ile	ggc Gly	ttt Phe	gtg Val	ata Ile	ctt Leu	gat Asp	ttg Leu	ttg Leu	tcc Ser	1104
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acc Thr	caa Gln	cag Gln	att Ile	tac Tyr	ctg Leu	ctc Leu	atc Ile	tgt Cys	ttg Leu	att Ile	tct Ser	gct Ala	gct Ala	gtc Val	cct Pro	1152
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385				390				395								
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405				410				415								
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420				425				430								
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465				470				475								
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485				490				495								
cgc Arg	gtc Val	ttg Leu	tct Ser	gcc Ala	att Ile	ccg Pro	gaa Glu	atg Met	cag Gln	tcg Ser	atg Met	atc Ile	gtt Val	gcg Ala	gaa Glu	1536
500				505				510								
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515				520				525								
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530				535				540								
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545				550				555								
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565				570				575								

Gly 145	Glu	Ser	Ile	Gly 150	Thr	Leu	Tyr	Phe	Phe	Asn 155	Thr	Leu	Gly	Ala 160	Ala
Leu	Gly	Ser	Leu	Ala 165	Ala	Ala	Glu	Phe	Phe 170	Tyr	Val	Phe	Phe	Thr 175	Leu
Ser	Gln	Thr	Ile 180	Ala	Leu	Thr	Ala	Cys 185	Leu	Asn	Leu	Leu	Ile 190	Ala	Ala
Ser	Val	Cys 195	Cys	Val	Thr	Glu	Arg 200	Met	Asp	Met	Val	Asn 205	Thr	Lys	Pro
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Leu 225	Gly	Ile	Glu	Val	Leu 230	Trp	Val	Arg	Met	Phe 235	Ser	Phe	Ala	Ala	Gln 240
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Asp	Phe	Leu	Ile	Leu	Gly	Ala 295	Ala	Trp	Leu	Leu	Thr 300	Gly	Phe	Ser	Gly
Phe 305	Val	His	His	Ala	Gly 310	Ile	Phe	Ile	Thr	Leu 315	Ser	Ala	Val	Val	Arg 320
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Ser	Gly	Arg	Gln 340	Val	Ser	Asn	Val	Tyr 345	Phe	Ala	Asn	Val	Ala 350	Gly	Ser
Ala	Leu	Gly 355	Pro	Val	Leu	Ile	Gly 360	Phe	Val	Ile	Leu	Asp 365	Leu	Leu	Ser
Thr 370	Gln	Gln	Ile	Tyr	Leu	Leu	Ile 375	Cys	Leu	Ile	Ser 380	Ala	Ala	Val	Pro
Leu 385	Phe	Cys	Thr	Leu	Phe 390	Gln	Lys	Ser	Leu	Arg 395	Leu	Asn	Ala	Val	Ser 400
Val	Ala	Val	Ser	Leu 405	Met	Phe	Gly	Ile	Leu 410	Met	Phe	Leu	Leu	Pro 415	Asp
Ser	Val	Phe	Gln 420	Asn	Ile	Ala	Gly	Arg 425	Pro	Asp	Arg	Leu	Ile 430	Glu	Asn
Lys	His	Gly 435	Ile	Val	Ala	Val	Tyr 440	His	Arg	Asp	Gly	Asp 445	Lys	Val	Val
Tyr	Gly 450	Ala	Asn	Val	Tyr	Asp 455	Gly	Ala	Tyr	Asn	Thr 460	Asp	Ile	Phe	Asn
Ser 465	Val	Asn	Gly	Ile	Glu 470	Arg	Ala	Tyr	Leu	Leu 475	Pro	Ser	Leu	Lys	Ser 480
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109130-034033-0360

Arg Val Leu Ser Ala Ile Pro Glu Met Gln Ser Met Ile Val Ala Glu
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515 520 525

Pro Leu Leu Gln Asp Lys Arg Val Glu Ile Val Leu Asp Asp Gly Arg
530 535 540

Lys Trp Leu Arg Arg His Pro Asp Glu Lys Phe Asp Leu Ile Leu Met
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Asn Ser Thr Trp Tyr Trp Arg Ala Tyr Ser Thr Asn Leu Leu Ser Ala
565 570 575

Glu Phe Leu Lys Gln Val Gln Ser His Leu Thr Pro Asp Gly Ile Val
580 585 590

Met Phe Asn Thr Thr His Ser Pro His Ala Phe Ala Thr Ala Val His
595 600 605

Ser Ile Pro Tyr Ala Tyr Arg Tyr Gly His Met Val Val Gly Ser Ala
610 615 620

Thr Pro Val Val Phe Pro Asn Lys Glu Leu Leu Lys Gln Arg Leu Ser
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Arg Leu Ile Trp Pro Glu Ser Gly Arg His Val Phe Asp Ser Ser Thr
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Val Asp Ala Ala Ala Gln Lys Val Val Ser Arg Met Leu Ile Arg Met
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<210> 79
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<220>
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<210> 80
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<223> Description of Artificial Sequence: primer

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<210> 86

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<223> Description of Artificial Sequence: primer

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<211> 30

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<223> Description of Artificial Sequence: primer

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<210> 88

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<223> Description of Artificial Sequence: primer

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gctctagacc accatgctga cgtttatcgg actg

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<210> 92
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<210> 95
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SECRET

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<210> 108
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<400> 109
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<210> 110
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<210> 111
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<210> 113
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<400> 115
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<210> 116
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<400> 129
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